THE VALUE AND CHARACTERISTICS OF RESIDENT HUNTING

Province of British Columbia
Ministry of Environment
WILDLIFE BRANCH

THE VALUE AND CHARACTERISTICS OF RESIDENT HUNTING

(RESULTS OF THE 1981 PROVINCIAL SURVEY)

Prepared for
The Wildlife Branch
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Roger Reid
Economic and Social Analysis Section
Ministry of Environment
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EXECUTIVE SUMMARY

British Columbia's wildlife provides an abundance and variety of recreational opportunities for residents and visitors to the Province and generates significant benefits for the provincial economy. In order to measure some of the benefits provided by wildlife, questionnaires were sent to 28,116 resident hunting license holders asking them about their hunting activity during 1981.

The results of this survey show that while hunting is predominantly a male pastime, it attracted a fairly representative cross-section of the male population of the Province based on age, income and education.

The results of the survey also revealed that resident hunters spent almost 1.5 million days in the field hunting wildlife in British Columbia during 1981. This hunting activity was quite widely spread among the eight Environmental Management Regions of the Province and directed to the large number of game species available in British Columbia. While residents hunted a variety of species, the greatest amount of effort was spent hunting deer, moose and elk.

Based on the survey results, resident hunters are estimated to have made total hunting related expenditures of almost 90 million dollars during 1981. This translates into an average annual expenditure of about $557 per hunter, or $58 for each day spent hunting. The major expenditures by hunters were for (1) travel and transportation,(2) food and lodging and (3) guns, ammunition and equipment.

These expenditures were widely distributed throughout the Province and made significant contributions to regional economies.

The survey also revealed that resident hunters would have been willing to spend an additional 52 million dollars over and above their actual expenditures for their hunting activity during 1981. This represents the net monetary value that residents placed on their hunting experiences after deducting the costs of providing these opportunities.

PREFACE

The purpose of this report is to present the results of a mail survey of hunters holding British Columbia resident hunter licenses in 1981. The survey, funded by the Fish and Wildlife Branch, was intended to provide more up-to-date information about the value and characteristics of hunting in the Province of British Columbia. The need for this survey arose because the only comprehensive information about the economic value of hunting in the Province is over fifteen years old and only provides values at the provincial level. The 1981 survey made it possible to determine more current values and also make estimates at the regional level. In addition, the survey provided information about a number of characteristics of hunters and their hunting activity during 1981.

The survey results provide information that is useful in wildlife management. For example, the economic values can be used as one of the criterion in judging the desirability of wildlife proposals. Also, in cases where proposed projects are expected to adversely influence wildlife, the economic values provide one measure of the expected impacts and form a basis for requesting mitigation and/or compensation from the proponent. The profiles of hunters and their hunting behaviour provide information for making management decisions and designing wildlife management plans.

This report was written in a form to be as usable as possible by technical and administrative staff. Although it results in a good deal of repetition, each species chapter follows a standard format. This was done so that the results for an individual species could be used without the need of going through the full report.

A number of individuals have been involved at different stages and in various aspects of the hunter survey. Chris Gibbs and John Thompson are responsible for the questionnaire design, the sample selection and coding of questionnaire returns. The computer analysis was done by Michael Stone who also provided very useful comments on a preliminary draft of this report. A number of regional and headquarters staff from the Wildlife Branch provided valuable comments and suggestions during the course of the survey.

Roger Reid, Ph.D.
Economic and Social Analysis Section
Ministry of Environment
April, 1985

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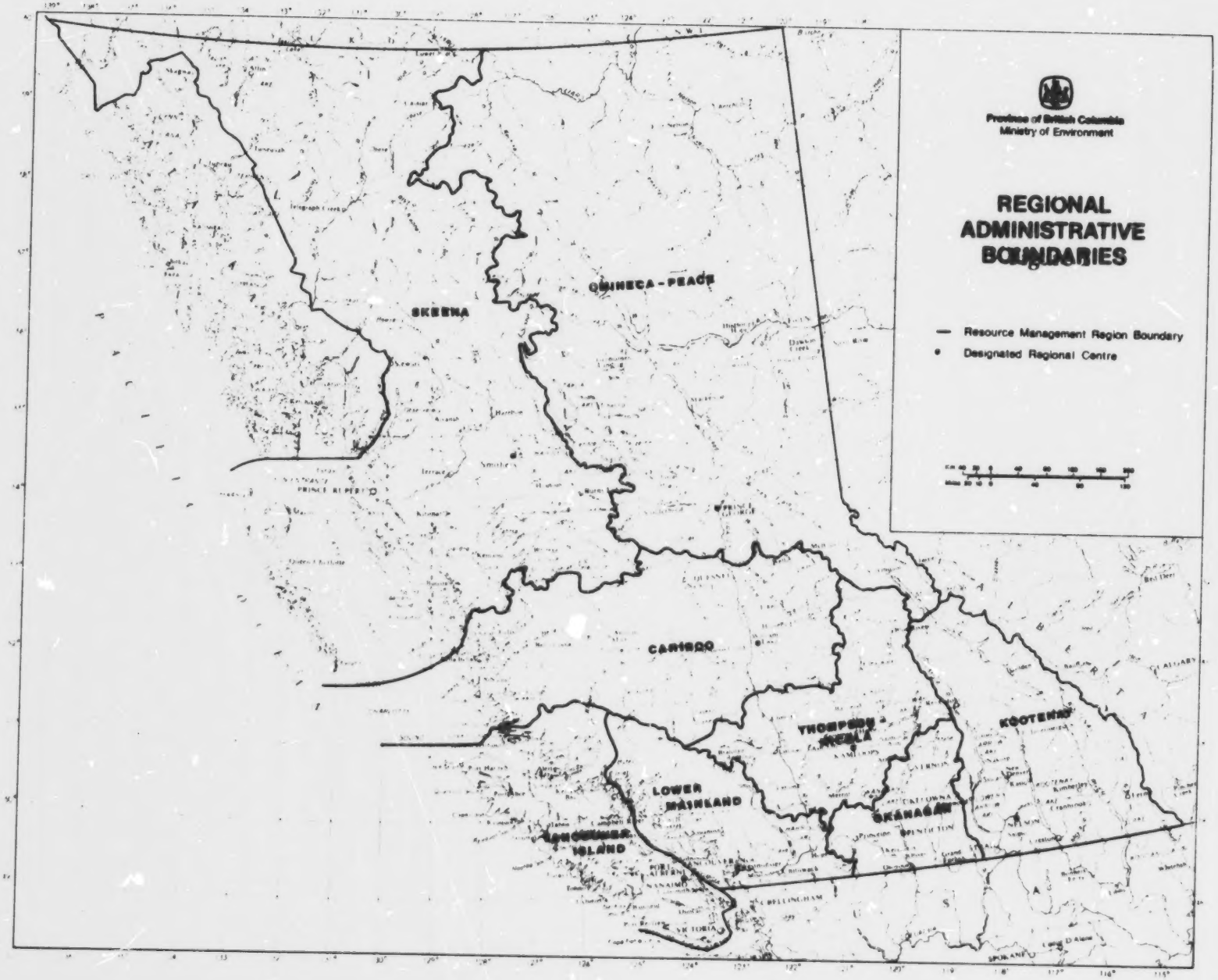
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OKANAGAN
VANCOUVER ISLAND

INTRODUCTION AND BACKGROUND

In order to obtain more complete and up-to-date information about hunting activity in British Columbia, an extensive survey of resident and non-resident hunters was undertaken by the Fish and Wildlife Branch of the Ministry of Environment. The survey was intended to establish estimates of hunters' expenditures and the values that they placed on their hunting experiences in British Columbia during the 1981 calendar year. The survey was also meant to determine profiles of hunters' social and economic characteristics and estimates of hunter effort and harvest. As such, the results of the provincial hunter survey were to supplement and complement existing sources of information about hunting in British Columbia.

This report presents estimates from the resident hunter survey in a series of species specific chapters that describe resident hunting according to the species hunted. A companion report describes non-resident hunter activity on a species specific basis.

Requirements for Resident Hunting

The requirements for hunting in British Columbia in 1981 are summarized in the British Columbia Hunting Regulations Synopsis 1981- 1982 prepared by the Fish and Wildlife Branch of the Ministry of Environment. Anyone hunting wildlife in British Columbia must obtain a valid hunting license. Residents of British Columbia, fourteen years of age or over, shall be issued a hunting license provided either: (i) they possess a certificate stating they have successfully completed a Conservation and Outdoor Recreation Education Examination, or (ii) they have been issued a previous hunting license after their fourteenth birthday. An official "acknowledgement of responsibility" form must be signed by a parent or guardian before a licence is issued to anyone under eighteen. Also, anyone under eighteen years of age bearing a firearm must be accompanied and supervised by a person twenty years of age or over.

A basic hunting license is required by any resident of British Columbia to carry firearms and hunt wildlife. The standard fee for this license was $7.00 for the 1981-82 hunting season and $1.00 for anyone sixty-five years of age and over. In addition to the basic hunting license, residents had to purchase a species license to hunt the big game species listed below:

Species	Species License fee (1981-82)
Black bear	$ 4.00
Caribou	10.00
Cougar	10.00
Deer	4.00
Elk	10.00
Grizzly bear	35.00
Moose	10.00
Mountain goat	15.00
Mountain sheep	25.00

The following table presents the annual sales of resident basic and species hunting licenses for the years from 1976/77 to 1982/83. While the survey was concerned only with hunting during 1981, the sales for 1982/83 are of interest due to the reaction of resident hunters to the fee increase that took effect that year.

The annual sales of basic licenses to resident hunters rose steadily over the period until 1982/83 when they fell - presumably in response to the license fee increase. The sales of most species licenses increased over the period up to, and including, 1981/82. The caribou species license was the only species license that decreased in sales presumably in response to changes in hunting seasons. The sales of mountain goat species licenses remained fairly stable over the period. During the 1982/83 season, the sales of all species licenses decreased compared to the previous season.

RESIDENT HUNTING LICENSE SALES 1976-1982

RESIDENT HUNTERS	76/77	77/78	78/79	79/80	80/81	81/82	82/83
Resident Hunting Licenses	132,531	136,938	147,294	153,925	158,036	163,982	143,587
Senior Citizen Licenses	6,958	7,509	8,311	9,163	9,843	10,106	10,515
Limited Entry Application Cards	386	798	5,373	9,432	15,163	29,884	44,883
Black Bear Licenses	12,697	12,973	15,231	18,169	21,821	22,289	17,135
Caribou Licenses	2,442	2,400	1,692	1,563	1,385	1,556	1,063
Cougar Licenses	456	494	579	524	478	624	442
Deer Licenses	101,613	107,472	117,586	127,582	133,002	138,171	131,439
Elk Licenses	6,808	8,266	10,499	11,645	13,924	15,825	14,866
Grizzly Bear Licenses	886	1,070	1,263	1,452	1,809	2,158	1,162
Moose Licenses	45,577	47,526	54,681	59,420	62,449	63,355	53,652
Mountain Goat Licenses	2,131	2,185	2,096	1,981	2,048	2,232	1,489
Mountain Sheep Licenses	1,075	1,252	1,469	1,621	1,703	2,068	1,494

Notes: 1. Caribou hunting was greatly restricted beginning in 1978-79 compared to previous seasons through closing all female (cow) seasons, shortening many open seasons and closing all caribou hunting in selected areas.

2. License fees doubled in 1982-83 compared to previous years except for Senior Citizen's (unchanged) and Limited Entry Applications (set at $3.00/application).

The ratio of total species licenses sold to basic licenses was found for the period from 1976/77 to 1982/83. This ratio showed a small but steady annual increase over the period as indicated in the following table.

	76/77	77/78	78/79	79/80	80/81	81/82	82/83
Species licenses/ Basic licenses	1.25	1.27	1.32	1.37	1.42	1.43	1.45

The reason for the increase in the ratio is not obvious. It may be that since the nominal price of species licenses were fixed for most of this period, the real price of licenses was decreasing. However, if this were the case then one would expect the ratio to drop with the fee increase in 1982/83.

The game hunting seasons in British Columbia are set out in the annual synopsis by species and region. While the bag limits in effect during the 1981-82 hunting season varied by species and location, the Provincial Bag Limit for most big game species was one per hunter. The exceptions were deer, black bear and cougar which typically had bag limits of two and wolf which has a bag limit of three. Some areas of the province are designated as Limited Hunt Areas for resident hunters. Any holder of a basic license may apply for a Limited Entry Hunt. Licenses for Limited Entry Hunting Areas are selected by public draw. A successful applicant must obtain a Limited Entry Hunting Authorization, in addition to the basic and species licenses. The effect of Limited Entry Hunting is to regulate the number of hunters in a given area or for a given period of time.

The Sample of Resident Hunters

The sample of resident hunters selected for the survey was drawn from the list of resident license holders according to the species license purchased. It was necessary to select greater percentages of species license holders for the less commonly hunted species in order to obtain sufficient sample sizes for those species. The questionnaire

(shown as Appendix C) was sent to a total of 28,116 resident hunters followed a few days later by a reminder postcard. Of the questionnaires sent out, 1,744 were returned undelivered and 11,890 were returned completed by hunters. This represented a response rate of about 45% by the resident hunters who received a questionnaire. The results obtained from the sample of hunters were expanded based on the number of resident hunting and species licenses reported in the Summary of Revenue Derived from the Sale of Various Licenses, Collections, Etc., April 1, 1981 to March 31, 1982. The resulting estimates for the hunter population are presented in this report.

While the present study is quite different in purpose and design from the annual Hunter Sample undertaken by the Biometrics Section of the Fish and Wildlife Branch, comparisons between the two are inevitable and therefore differences must be addressed. The primary differences in results between the present surveys and the 1981 Hunter Sample are the estimates of hunter days and, to a lesser extent, harvest. For some species, the present survey gives estimates of hunter days that are 40 to 50% greater than the 1981 published estimates from the Hunter Sample. Deer is the only species where the estimated days in the Hunter Sample is greater than in the present study. There are two reasons for the differences in estimates between the surveys. The first is that the two sets of estimates are based on a different number of hunters. The Hunter Sample survey results are expanded to an estimated number of species license holders rather than the actual number of license holders since the latter are not available when the estimates are made. In contrast, the expansion to the hunter population for the present survey was based on the actual number of licenses sold. As a consequence, the present survey was based on an active hunter population that was for some species as much as 25 to 30% greater than that used for the Hunter Sample. The active hunter population refers to the number of residents who purchased basic resident hunting licenses and spent some time in the field hunting. The comparison between the present survey and Hunter Sample results for deer is different than for other species. This is

because the Hunter Sample estimates for deer are based on the population of basic license holders and not species license holders as in the case of other species. As a consequence, the number of active deer hunters in the Hunter Sample is about 18% greater than in the present survey. This leads to a greater number of deer hunter days being estimated by the Hunter Sample than the present survey.

The difference in the active hunter population accounts for much of the difference in the estimates of harvest and a significant proportion of the difference in hunter days. Nevertheless, there does remain a fair amount of difference in the estimates of hunter days even after the Hunter Sample results have been extrapolated to actual license sales. This is because the average number of hunter days per hunter reported in the present study for all species is greater than was found in the 1981 Hunter Sample. This difference can be explained by the difference in the timing and design of the two surveys. The Hunter Sample questionnaires are mailed out early in the new year after most hunting for the season is complete while the questionnaire for the present survey was sent out about three months later. This should not present a serious problem for estimates of harvest since hunters, unlike anglers trying to recall the number of fish caught, should be able to recall if they bagged an animal. However, the further removed hunters are from the hunting season, the more difficult it becomes to recall the number of days spent hunting particular species. This "recall bias", which has been analyzed and documented in a number of studies, would suggest that the number of hunter days per hunter reported in the present survey are likely to have an upward bias. This effect is reinforced by the fact that the present survey, unlike the Hunter Sample, did not send out a follow-up questionnaire to those who did not respond to the initial mailing. It is probable that hunters responding to a single mailing of a questionnaire are more enthusiastic hunters and spend more time hunting than the typical hunter. A second and subsequent mailing is likely to induce the less active hunters to reply and provide a more representative sample of hunting activity.

The conclusion that might be drawn from the comparison between the two surveys is that the hunter day estimates reported in the Hunter Sample represent a lower bound to the actual number of days while the estimates from the present survey represent an upper bound. This is because the Hunter Sample provides a more accurate measure of the average number of days spent hunting per year but underestimates the hunter population. The present survey, on the other hand, was able to use a more accurate measure of the hunter population but over-estimates the number of days each hunter spends hunting. While there remains some differences in the estimates of other characteristics, such as harvests, between the surveys, these appear to be of reasonable orders of magnitude and not consistently in the same direction once the Hunter Sample estimates have been adjusted to the full hunter population. As explained the remaining differences in estimates of hunter days between the annual Hunter Sample and the present survey are a result of the differences in purpose and design of the two surveys. The primary aim of the Hunter Sample is to provide estimates of hunter effort and harvest for purposes of wildlife management whereas the main concern in designing the present survey was to obtain information about hunting values. The value estimates from the present survey can be used with the annual effort data from the Hunter Sample to evaluate the Wildlife Program and proposals. It is intended that the updated values will be accessible through the Wildlife Branch's computerized Summary Statistics Data Base.

Study Outline

The first section of each species chapter presents estimates of the number of residents hunting the particular species and the number of days spent hunting that species during 1981. The distribution of hunters and hunter days among the province's eight Environmental Management Regions (see map) are also reported. For purposes of this survey, a hunter day is defined as a day, or any part of a day spent hunting. It should be cautioned that there are, in effect, two ways in which the

numbers of hunters and hunter days can be counted. This distinction can be illustrated by an example. Suppose a hunter spent ten days in the field hunting moose, deer and elk simultaneously. In determining the number of hunters and hunter days, it would be appropriate to include this hunter and his hunter days in the samples for moose, deer and elk hunting. This hunter would be effectively treated as three hunters and as having spent 30 species hunter days, 10 for each of the species hunted. However, in determining the amount of recreation provided by hunting, we would count our hunter only once and as having spent 10 recreational hunter days in the field. Therefore, a recreational hunter day is defined as a day, or any part of a day, spent in the field hunting. A species hunter day is defined as a day, or any part of a day, spent hunting a particular species. The hunter days referred to in the species chapters are the so-called species hunter days and are definitionally equivalent to the hunter days estimated by the Hunter Sample. It is not possible to sum the species hunter days to arrive at the number of recreational hunter days since this would involve multiple counting. Estimates of the number of recreational hunter days according to the region of hunt are shown in the following table.

ESTIMATED RECREATIONAL HUNTER DAYS, 1981

Region of Hunt	Hunter Days		Average Hunter Days
	Number	% Distribution	
Vancouver Island	206,700	14.0%	14.2
Lower Mainland	112,600	7.9	10.8
Thompson-Nicola	173,200	11.8	10.5
Kootenay	309,200	21.0	15.4
Cariboo	174,000	11.8	10.5
Skeena	162,000	11.0	13.1
Omineca-Peace	221,900	15.1	12.3
Okanagan	111,700	7.4	11.3
Province	1,471,300	100.0	12.5

Resident hunters are estimated to have spent an average of 12.5 days in the field hunting during 1981. For the typical hunter, 6.2 days of his time spent hunting was on weekends, 2.0 days were non-vacation week-days and 4.3 days of hunting were during vacation. The time spent hunting during vacation came out of an average annual vacation of 14.7 days reported by hunters for 1981. The average size of parties in which residents hunted in 1981 was 2.6 people, of which, only about 0.3 people did not actively hunt. Finally, licensed resident hunters are estimated to have spent approximately 47,000 days hunting outside British Columbia during 1981.

The second section of each species chapter presents the estimated harvest and its distribution among the eight regions. Measures of hunter success are presented along with the estimated harvest. It should be pointed out that in some instances the magnitudes of the estimated harvests, and to a lesser extent hunter days, broken down by region are not very reliable due to small sample sizes. Of course, as the amount of hunting of a species in a region becomes greater, more significance can be attached to the estimates. The estimated harvests of caribou, cougar, grizzly bear, mountain goat and mountain sheep are compared to the compulsory inspection results. Compulsory reporting requires that all hunters killing a caribou, grizzly bear, cougar, mountain sheep, mountain goat or a wolf (on Vancouver Island or in the Kootenay Region) only submit a specified part of the animal to officials for measurement and inspection. Also, information about the date and location of kill and the number of days spent hunting prior to the kill must be provided. For these species, the compulsory inspection results are probably more accurate than the survey estimates since they are based on all, or nearly all, successful hunters. The harvest figures from the compulsory inspection are exclusive of pick-ups, illegal kills and kills of nuisance animals. However, they do include any reported harvests by unlicensed Indians who, of course, are not included in the hunter survey since the sample was drawn from license holders. This section also reports what percentage of species hunters were satisfied

with their hunting experience in 1981 and intended to hunt that species the following year.

The third section of the species chapters presents estimates of expenditures by resident species hunters. Estimates of hunters' total expenditures as well as expenditures made in their home region are reported. In order to avoid multiple counting, each hunter's expenditures were, in effect, apportioned among the species hunted. This can be shown by continuing the example of the hunter used earlier. If our hunter had incurred total expenditures of $3,000 it would be incorrect to fully attribute this $3,000 of expenditure to each of moose hunting, deer hunting and elk hunting. Rather, it is necessary to apportion the $3,000 of expenditures among the three species hunted or treat hunters as if they hunted only a single species. This was done by treating each recreational hunter as if he hunted only one species. Hunters were assigned to a species by allocating the population of active basic license holders to a species according to the proportion of all active species licenses that particular species represented. This approach would have the effect of allocating our hunter's expenditures equally among the three species hunted.

Section 3 gives estimates of average annual and average daily expenditures as well as total expenditures. The measures of average expenditures are for species hunters and species hunter days as defined earlier rather than for recreational hunters and hunter days. Of the two measures of average expenditures, daily expenditures is more appropriate for making comparisons between hunters hunting different species. This is because part of the variation in the annual expenditures of hunters of different species is explained by the difference in the number of days spent hunting rather than the actual costs of the hunt.

Expenditures by resident hunters were estimated for the recent federal-provincial study "The Importance of Wildlife to Canadians" coordinated by the Canadian Wildlife Service (C.W.S.). The average annual

expenditures reported in the third section of each species chapter can be compared to the estimates made for the C.W.S. study as a limited check on their reliability. The C.W.S. study estimated transportation costs of $176.65 for big game hunters in 1981 whereas the present study estimated transportation expenditures of $193. The C.W.S. study estimated annual food and accommodation costs of $83.52 compared to the present estimate of $82. The C.W.S. study estimated miscellaneous expenditures at $45.07 which compares to the present estimate of $49. The major difference in the expenditure estimates between the studies is for the equipment category. The C.W.S. survey defined this category to include capital purchases such as boats, trailers, snowmobiles and multiple terrain vehicles used for hunting. Their estimate for this category was $469.44. The present study was concerned only with current expenditures and did not include large capital outlays in its definition of equipment. The estimate of average annual expenditures on equipment plus taxidermy and butchering was $201. In summary, the expenditure estimates of the C.W.S. and present studies seem quite compatible with the single exception due to the difference in definition of equipment.

The final sections of the species chapters present the estimates of the daily economic values found for hunting different species. The daily economic values are differentiated by the region hunted for those species where the sample size was sufficiently large to do so, and the resulting estimates were statistically significant according to the standard normal distribution. The economic values presented in this section can be interpreted as a measure of the amount of satisfaction or enjoyment that hunters derive from a day spent hunting expressed in monetary units. These values are estimated by asking hunters to state the maximum amount they would be willing to pay, over and above their actual expenditures, for a day spent hunting the particular species. This can be thought of as a maximum admission price or fee that hunters would be willing to pay if there were a daily charge for hunting and as such represents the value of a day spent hunting. The value hunters place on their hunting experience will often vary from one region to

another due to differences in the availability and abundance of wildlife, the probabilities of a successful hunt, the aesthetic features of the area and many other factors. An attempt has been made, where possible, to take account of these differences and estimate the economic value of a day spent hunting a species according to the region hunted. The values reported in this section are the appropriate measures to employ in any economic assessment of wildlife related recreation such as would be found in a mitigation-compensation claim or a benefit-cost analysis.

The only estimates of the recreational value of big game hunting in British Columbia that are comparable to the results presented in the text were made by Peter Pearse and Gary Bowden and reported in their study "The Value of Resident Hunting in British Columbia" (Pearse-Bowden Economic Consultants Limited, 1972). The results of this study were based on a survey of resident hunting activity during the 1970-71 season. The Pearse-Bowden study has provided useful measures of the recreational values of big game hunting that have been widely employed in mitigation-compensation claims and benefit-cost analyses. Unfortunately, even though the Pearse-Bowden study was a pioneering effort at the time, it suffers from some limitations and its results are now well over ten years old. It was in an attempt to overcome some of these limitations and update the hunter values that the present study was undertaken. As such, it is useful to compare the present results to Pearse-Bowden results to get a general indication of how hunters feel the value of their hunting experience has changed in the ten year interval between the surveys.

CHAPTER 1
RESIDENT BLACK BEAR HUNTING

1.1 Estimated Resident Black Bear Hunters and Hunter Days

Hunters resident in British Columbia purchased a total of 22,289 black bear species licenses for the 1981-82 hunting season. Of the resident hunters responding to the survey questionnaire, 4,635 actively hunted black bear during 1981. Hunters were asked to indicate their preferences for hunting different species by ranking them from the most preferred to the least preferred. The results indicate that black bear was the fourth most preferred species among all resident hunters out of thirteen choices composed of ten big game species plus waterfowl, upland game birds and small game. Resident hunters who actively hunted black bear in 1981 indicated that black bear was their fourth most preferred species. The other species making up the five most preferred species for black bear hunters were: deer (first), moose (second), elk (third) and mountain sheep (fifth).

Based on species license sales and the survey results, it is estimated that a total of 12,838 resident hunters actively hunted black bear during 1981. This represented 11% of all active resident hunters. The estimated distribution of active resident black bear hunters among the eight Environmental Management Regions is reported in the first column of Table 1.1. Resident hunters are estimated to have spent a total of 106,900 days hunting black bear in British Columbia during 1981. Resident black bear hunting effort by region is reported in the second column of Table 1.1 while the third column summarizes the average number of days resident hunters spent hunting black bear during 1981. Black bear hunter days made up 7% of the total resident species hunter days during 1981. The greatest percentage of resident black bear hunting effort took place in the Kootenay Region (20%) followed by the Omineca-Peace Region (17%).

Resident hunters were asked if they hunted a particular species for a trophy, meat or both. From the responses to this question, it is estimated that 44% of resident black bear hunters hunted black bear for a trophy while 20% hunted for meat and 36% hunted for both reasons. By way of comparison, it is estimated that 7% of all resident hunting was for a trophy, 68% for meat and 25% for both. This suggests that resident black bear hunters were less likely to hunt black bear as a meat species than the average for all species.

TABLE 1.1
ESTIMATED RESIDENT HUNTERS AND HUNTER DAYS (BLACK BEAR), 1981

REGION HUNTED	NUMBER OF HUNTERS	NUMBER OF HUNTER DAYS (Percentage Distribution)	AVERAGE HUNTER DAYS PER HUNTER
		%	
Vancouver Island	1,378	11,100 (10.4)	8.1
Lower Mainland	806	4,200 (3.9)	5.2
Thompson-Nicola	1,731	13,400 (12.5)	7.7
Kootenay	2,258	21,500 (20.1)	9.5
Cariboo	1,582	13,500 (12.6)	8.5
Skeena	1,598	14,400 (13.5)	9.0
Omineca-Peace	2,147	18,300 (17.1)	8.5
Okanagan	1,338	10,500 (9.9)	7.8
TOTALS	12,838	106,900 (100)	8.3

1.2 Estimated Resident Hunter Black Bear Harvest

It is estimated that 4,260 black bear were harvested by resident hunters in British Columbia during 1981. The distribution of the black bear harvest among the eight regions is presented in the first column of Table 1.2. The table also reports two measures of hunting success. The second column shows the percentage of active black bear hunters who killed at least one black bear during 1981 while the third column shows the average number of hunter days per harvest.

It is estimated that 62% of resident black bear hunters were satisfied with the black bear component of their 1981 hunting experience while 38% were not satisfied. This compares with 64% of resident black bear hunters who were satisfied with their total hunting experience and 36% who were not satisfied. For all resident hunters, it is estimated that 64% were satisfied with their hunting experience during 1981 while 36% were not. Also, it is estimated that among residents who actively hunted black bear in 1981, 79% planned to hunt black bear again the following year.

TABLE 1.2
ESTIMATED RESIDENT HUNTERS HARVEST (BLACK BEAR), 1981

REGION HUNTED	HARVEST (Percentage Distribution)	% OF ACTIVE HUNTERS SUCCESSFUL	HUNTER DAYS PER HARVEST
Vancouver Island	457 (10.7)	29	24.3
Lower Mainland	194 (4.6)	20	21.6
Thompson-Nicola	573 (13.5)	21	23.4
Kootenay	820 (19.2)	30	26.2
Cariboo	443 (10.4)	21	30.5
Skeena	546 (12.8)	29	26.4
Omineca-Peace	875 (20.5)	31	20.9
Okanagan	352 (8.3)	22	29.8
TOTALS	4,260 (100)	26	25.1

1.3 Expenditures by Resident Black Bear Hunters, 1981

Table 1.3 reports estimates of the hunting-related expenditures made by resident black bear hunters in British Columbia and in hunters' home region during 1981. Resident black bear hunters, on average, made 67% of their provincial hunting expenditures in their region of residence. The greatest expenditures by resident black bear hunters were made on transportation and travel composing 32% of their total expenditures and 29% of expenditures in the home region. It is estimated that resident black bear hunters made 10% of the total expenditures of all resident hunters in British Columbia during 1981.

TABLE 1.3
ESTIMATED RESIDENT BLACK BEAR HUNTER EXPENDITURES
(1981 Dollars)

Expenditure Category	Total Expenditures in British Columbia ($)	(%)	Expenditures in Home Region ($)
Basic and Species Licenses	414,100	(5.0)	333,500
Transportation and Travel	2,644,500	(32.0)	1,612,800
Food and Lodging	1,111,300	(13.5)	572,800
Taxidermy and Butchering	951,500	(11.5)	624,100
Guns, Ammunition and Hunting Equipment	2,356,400	(28.6)	1,865,800
Other Expenses	774,100	(9.4)	537,600
Totals	8,251,900	(100.0)	5,546,600

Resident hunter expenditures can also be described by the average amounts spent per year and per day. Table 1.4 gives estimates of average annual expenditures made by resident black bear hunters in British Columbia and in the home region during 1981. For comparison, the average annual expenditures by all resident hunters, in British Columbia and in their home regions, are shown in the third and fourth columns of Table 1.4.

As discussed in the introduction, average daily expenditures provides a more standardized basis for comparison among hunters than does annual expenditures. Table 1.5 presents estimates of the average expenditures per day, in British Columbia and in the home region, by resident black bear hunters during 1981. Again, for purposes of comparison, the third and fourth columns of the table present the average daily expenditures by all resident hunters.

TABLE 1.4
ESTIMATED AVERAGE ANNUAL EXPENDITURES BY RESIDENT BLACK BEAR HUNTERS, 1981
(1981 Dollars)

EXPENDITURE CATEGORY	BLACK BEAR HUNTERS		ALL RESIDENT HUNTERS	
	Expenditures in British Columbia ($)	Expenditures in Home Region ($)	Expenditures in British Columbia ($)	Expenditures in Home Region ($)
Basic and Species Licenses	32	26	32	24
Transportation and Travel	206	126	193	107
Food and Lodging	87	45	82	38
Taxidermy and Butchering	74	49	55	40
Guns, Ammunition and Equipment	184	145	146	111
Other Expenses	60	42	49	34
TOTALS	643	433	557	354

TABLE 1.5
ESTIMATED AVERAGE DAILY EXPENDITURES BY RESIDENT
BLACK BEAR HUNTERS, 1981
(1981 Dollars)

EXPENDITURE CATEGORY	BLACK BEAR HUNTERS		ALL RESIDENT HUNTERS	
	Expenditures in British Columbia ($)	Expenditures in Home Region ($)	Expenditures in British Columbia ($)	Expenditures in Home Region ($)
Basic and Species Licenses	4	3	3	3
Transportation and Travel	25	15	20	11
Food and Lodging	11	5	9	4
Taxidermy and Butchering	9	6	6	4
Guns, Ammunition and Equipment	22	18	15	11
Other Expenses	7	5	5	4
TOTALS	78	52	58	37

1.4 Estimated Economic Value of Resident Black Bear Hunting

The economic values reported in this section are based on estimated equations that predict the value resident hunters place on a day spent hunting black bear. An attempt was made in estimating these equations to take account of as many factors as possible that affect the value a hunter places on a day spent hunting. Since the quality of hunting varies to some extent by location, the value of a day spent hunting was estimated, where possible, according to the region hunted. The reported values refer to the amounts that resident hunters would, on average, be willing-to-pay for a day spent hunting black bear over and above their

actual expenditures reported in section 1.3. These values can be interpreted as the net recreational gain to resident hunters of a day spent hunting black bear and as such are the appropriate measures to use in valuing black bear hunter day losses for mitigation-compensation claims or benefit-cost analyses.

The average value all resident black bear hunters placed on a day spent hunting black bear was estimated to be $17.90. The distribution of daily values for hunting black bear by the region of hunt is presented in the first column of Table 1.6. The second column of the table presents estimates of the average annual value or the so-called "consumer surplus" that resident black bear hunters derived from their black bear hunting experience during 1981. The final column of the table reports estimates of the total economic value of resident black bear hunting according to the region hunted and for the province as a whole. These values are the products of the estimated number of hunter days from Table 1.1 and the appropriate per day values.

TABLE 1.6
ESTIMATED VALUE OF RESIDENT BLACK BEAR HUNTING, 1981
(1981 Dollars)

Region Hunted	Daily Hunting Value	Annual Hunting Value	Total Hunting Value
Vancouver Island	18.80	151	208,680
Lower Mainland	22.90	119	96,180
Thompson-Nicola	20.30	157	272,020
Kootenay	15.80	150	339,700
Cariboo	16.50	141	222,750
Skeena	18.20	164	262,080
Omineca-Peace	17.50	149	320,250
Okanagan	18.00	141	189,000
British Columbia	17.90	149	1,910,660

While resident hunters devoted a significant amount of effort to black bear hunting in 1981 they did not place a very high value on a day spent hunting black bear. Indeed, the average provincial value of $17.90 per day spent hunting black bear was the lowest value found for any species. This value compares to Pearse-Bowden's per day value of $12.20 expressed in 1981 dollars. However, not too much reliance should be placed on the latter value since Pearse-Bowden did not survey black bear hunters but rather estimated what a black bear hunter day might be

worth compared to the results of surveyed species hunter days. Even though resident hunters placed a low value on a day spent hunting black bear, black bear hunting produced almost two million dollars in recreational benefits for residents in 1981. This value was exceeded only by deer, moose and elk hunting.

The values presented in Table 1.6 are expressed in 1981 dollars. In some instances, analysis may require expressing hunting values in more recent dollars. For example, we may want to evaluate the desirability of an enhancement project in terms of the hunter day values it is expected to produce. If the costs of the project are expressed in 1983 dollars then the benefits must be measured in the same year's dollar. This is because the real value of a dollar as a unit of measure changes from year to year with inflation. In order to facilitate such analysis, Table 1.7 presents the values of a day spent hunting black bear expressed in 1982, 1983 and 1984 dollars. The 1981 values were inflated to 1982 values using an index of 10.8%, from 1982 to 1983 dollar values using an index of 8.0% and from 1983 to 1984 values using an index of 4.0%.

TABLE 1.7
ESTIMATED DAILY VALUE OF RESIDENT BLACK BEAR HUNTING
EXPRESSED IN 1982, 1983 AND 1984 DOLLARS

Region Hunted	Daily Hunting Value (1982 dollars)	Daily Hunting Value (1983 dollars)	Daily Hunting Value (1984 dollars)
Vancouver Island	20.80	22.50	23.40
Lower Mainland	25.40	27.40	28.50
Thompson-Nicola	22.50	24.30	25.30
Kootenay	17.50	18.90	19.70
Cariboo	18.30	19.70	20.50
Skeena	20.20	21.80	22.70
Omineca Peace	19.40	20.90	21.70
Okanagan	19.90	21.50	22.40
British Columbia	19.80	21.40	22.30

CHAPTER 2
RESIDENT CARIBOU HUNTING

2.1 Estimated Resident Caribou Hunters and Hunter Days

Hunters resident in British Columbia purchased a total of 1,556 caribou species licenses for the 1981-82 hunting season. Of the resident hunters responding to the survey questionnaire, 486 actively hunted caribou during 1981. Hunters were also asked to indicate their preferences for hunting different species by ranking them from the most preferred to the least preferred. The results indicate that caribou was the eighth most preferred species among all resident hunters out of thirteen choices composed of ten big game species plus waterfowl, upland game birds and small game. Resident hunters who actively hunted caribou in 1981 indicated that caribou was their fourth most preferred species. The other species making up the five most preferred species for caribou hunters were: moose (first), deer (second), mountain sheep (third) and elk (fifth).

Based on species license sales and the survey results, it is estimated that a total of 868 resident hunters actively hunted caribou during 1981. This represented less than 1% of all active resident hunters. The estimated distribution of active resident caribou hunters among the eight Environmental Management Regions is reported in the first column of Table 2.1. Resident hunters are estimated to have spent a total of 7,020 days hunting caribou in British Columbia during 1981. Resident caribou hunting effort by region is reported in the second column of Table 2.1 while the third column summarizes the average number of days resident hunters spent hunting caribou during 1981. Caribou hunter days made up less than 1% of the total resident species hunter days during 1981. The greatest percentage of resident caribou hunting effort took place in the Skeena Region (48%) followed by the Omineca-Peace Region (43%).

Resident hunters were asked if they hunted a particular species for a trophy, meat or both. From the responses to this question, it is estimated that 14% of resident caribou hunters hunted caribou for a trophy while 34% hunted for meat and 52% hunted for both reasons. By way of comparison, it is estimated that 7% of all resident hunting was for a trophy, 68% for meat and 25% for both. This suggests that resident caribou hunters were more likely to hunt caribou as a combined hunt species than the average for all species.

TABLE 2.1
ESTIMATED RESIDENT HUNTERS AND HUNTER DAYS (CARIBOU), 1981

REGION HUNTED	NUMBER OF HUNTERS	NUMBER OF HUNTER DAYS (Percentage Distribution)	AVERAGE HUNTER DAYS PER HUNTER
Vancouver Island	*	* (-)	*
Lower Mainland	*	* (-)	*
Thompson-Nicola	13	50 (0.7)	3.8
Kootenay	7	150 (2.1)	21.4
Cariboo	79	440 (6.3)	5.6
Skeena	406	3,360 (47.9)	8.3
Omineca-Peace	363	3,020 (43.0)	8.3
Okanagan	*	* (-)	*
TOTALS	868	7,020 (100)	8.1

*No caribou hunting in these regions.

2.2 Estimated Resident Hunter Caribou Harvest

It is estimated that 154 caribou were harvested by resident hunters in British Columbia during 1981. The distribution of the caribou harvest among the eight regions is presented in the first column of Table 2.2. The compulsory inspection reported a harvest of 130 caribou by resident hunters in 1981. The harvest of caribou by resident hunters estimated from the survey results is greater than the compulsory inspection returns. The Hunter Sample for 1981-82, adjusted to the actual number of license holders, also gives a larger estimate of harvest than the compulsory inspection. These differences may be because there are not the same incentives for meat hunters to abide by the compulsory inspection requirements as for trophy hunters. A fairly high percentage of resident caribou hunters (34%) indicated that they hunted caribou solely for meat.

The table also reports two measures of hunting success. The second column shows the percentage of active caribou hunters that killed a caribou during 1981 while the third column shows the average number of hunter days per harvest. The highest percentage of the provincial caribou harvest took place in the Skeena Region (57%) followed by the Omineca-Peace Region (36%). It appears that caribou hunters were somewhat more successful in the Skeena Region than in the Omineca-Peace. It also appears that very little caribou hunting takes place in the other regions. The compulsory inspection results suggest that the estimated harvests for the Skeena and Omineca-Peace Regions are biased upward while the harvest in the Cariboo Region is under-estimated.

It is estimated that 51% of resident caribou hunters were satisfied with the caribou component of their 1981 hunting experience while 49% were not satisfied. This compares with 66% of resident caribou hunters who were satisfied with their total hunting experience and 34% who were not satisfied. For all resident hunters, it is estimated that 64% were satisfied with their hunting experience during 1981 while 36% were not. Also, it is estimated that among residents who actively hunted caribou in 1981, 54% planned to hunt caribou again the following year.

TABLE 2.2

ESTIMATED RESIDENT HUNTERS HARVEST (CARIBOU), 1981

REGION HUNTED	HARVEST (Percentage Distribution)	% OF ACTIVE HUNTERS SUCCESSFUL	HUNTER DAYS PER HARVEST
Vancouver Island	* (-)	*	*
Lower Mainland	* (-)	*	*
Thompson-Nicola	2 (1.3)	14	25.0
Kootenay	0 (0)	0	-
Cariboo	9 (5.8)	11	48.9
Skeena	88 (57.1)	22	38.2
Omineca-Peace	55 (36.8)	15	54.9
Okanagan	*	*	*
TOTALS	154 (100)	18	45.6

*No caribou hunting in these regions.

2.3 Expenditures by Resident Caribou Hunters

Table 2.3 reports estimates of the hunting-related expenditures made by resident caribou hunters in British Columbia and in hunters' home region during 1981. Resident caribou hunters, on average, made 54% of their provincial hunting expenditures in their region of residence. The greatest expenditures by resident caribou hunters were made on transportation and travel which composed 35% of their total expenditures and 15% of expenditures in the home region. It is estimated that resident caribou hunters made 1% of the total expenditures of all resident hunters in British Columbia during 1981.

TABLE 2.3
ESTIMATED RESIDENT CARIBOU HUNTER EXPENDITURES, 1981
(1981 Dollars)

Expenditure Category	Total Expenditures in British Columbia ($)	(%)	Expenditures in Home Region ($)
Basic and Species Licenses	45,100	(4.8)	34,900
Transportation and Travel	327,200	(34.5)	139,200
Food and Lodging	139,600	(14.7)	51,900
Taxidermy and Butchering	104,800	(11.1)	74,800
Guns, Ammunition and Hunting Equipment	238,000	(25.1)	162,900
Other Expenses	93,300	(9.8)	44,100
Totals	948,000	(100)	507,800

Resident hunter expenditures can also be described by the average amounts spent per year and per day. Table 2.4 gives estimates of average annual expenditures made by resident caribou hunters in British Columbia and in the home region during 1981. For comparison, the average annual expenditures by all resident hunters, in British Columbia and in their home regions, are shown in the third and fourth columns of Table 4.

As discussed in the introduction, average daily expenditures provides a more standardized basis for comparison among hunters than does annual expenditures. Table 2.5 presents estimates of the average expenditures per day in British Columbia and in the home region by resident caribou hunters during 1981. Again, for purposes of comparison, the third and fourth columns of the table present the average daily expenditures by all resident hunters.

Resident caribou hunters spent significantly more on average per day than did all hunters. Part of the explanation for this is that caribou hunters tended to spend less time hunting per year than was found for all hunters. This means that the fixed hunting costs are greater for caribou hunters when converted to a daily basis than for all hunters on average. Also, caribou hunting was restricted to a few areas of the Province. This means that many hunters would incur greater travel and accommodation costs to hunt caribou than for other species such as deer.

TABLE 2.4

ESTIMATED AVERAGE ANNUAL EXPENDITURES BY RESIDENT CARIBOU HUNTERS, 1981

(1981 Dollars)

EXPENDITURE CATEGORY	CARIBOU HUNTERS		ALL RESIDENT HUNTERS	
	Expenditures in British Columbia ($)	Expenditures in Home Region ($)	Expenditures in British Columbia ($)	Expenditures in Home Region ($)
Basic and Species Licenses	52	40	32	24
Transportation and Travel	377	160	193	107
Food and Lodging	161	60	82	38
Taxidermy and Butchering	121	86	55	40
Guns, Ammunition and Equipment	274	188	146	111
Other Expenses	107	51	49	34
TOTALS	1,092	585	557	354

TABLE 2.5

ESTIMATED AVERAGE DAILY EXPENDITURES BY RESIDENT CARIBOU HUNTERS, 1981
(1981 Dollars)

EXPENDITURE CATEGORY	CARIBOU HUNTERS		ALL RESIDENT HUNTERS	
	Expenditures in British Columbia ($)	Expenditures in Home Region ($)	Expenditures in British Columbia ($)	Expenditures in Home Region ($)
Basic and Species Licenses	6	5	3	3
Transportation and Travel	47	20	20	11
Food and Lodging	20	7	9	4
Taxidermy and Butchering	15	11	6	4
Guns, Ammunition and Equipment	34	23	15	11
Other Expenses	13	6	5	4
TOTALS	135	72	58	37

2.4 Estimated Economic Value of Resident Caribou Hunting

The economic values reported in this section are based on estimated equations that predict the value resident hunters place on a day spent hunting caribou. An attempt was made in estimating these equations to take account of as many factors as possible that affect the value a hunter places on a day spent hunting. Since the quality of hunting varies to some extent by location, the value of a day spent hunting was estimated, where possible, according to the region hunted. The reported values refer to the amounts that resident hunters would, on average, be willing to pay for a day spent hunting caribou over and above their

actual expenditures reported in section 2.3. These values can be interpreted as the net recreational gain to resident hunters of a day spent hunting caribou and as such are the appropriate measures to use in valuing caribou hunter day losses for mitigation-compensation claims or benefit-cost analyses.

The average value all resident caribou hunters placed on a day spent hunting caribou was estimated to be $27.70. The distribution of daily values for hunting caribou by the region of hunt is presented in the first column of Table 2.6. The second column of the table presents estimates of the average annual value or the so-called "consumer surplus" that resident caribou hunters derived from their caribou hunting experience during 1981. The final column of the table reports estimates of the total economic value of resident caribou hunting according to the region hunted and for the Province as a whole. These values are the products of the estimated number of hunter days from Table 2.1 and the appropriate per day values.

TABLE 2.6
ESTIMATED VALUE OF RESIDENT CARIBOU HUNTING, 1981
(1981 Dollars)

Region Hunted	Daily Hunting Value ($)	Annual Hunting Value ($)	Total Hunting Value ($) (%)
Vancouver Island	*	*	* (-)
Lower Mainland	*	*	* (-)
Thompson-Nicola	21.20	82	1,060 (0.5)
Kootenay	21.20	454	3,180 (1.6)
Cariboo	21.20	118	9,330 (4.8)
Skeena	27.30	226	91,730 (47.2)
Omineca-Peace	29.60	246	89,390 (45.9)
Okanagan	*	*	* (-)
British Columbia	27.70	224	194,690 (100)

* No caribou hunting in these regions.

The per day values reported in the first column of Table 2.6 for the Thompson-Nicola, Kootenay and Caribou regions is the average value for caribou hunting outside the Skeena and Omineca Peace regions. This procedure was necessary since there were insufficient observations to make individual estimates for the three regions mentioned. The average provincial value of $27.70 per day spent hunting caribou compares to Pearse-Bowden's estimate of $39.00 per day expressed in 1981 dollars.

This apparent decrease in the value of a day spent hunting caribou is probably due to the sharp decline in caribou hunting opportunities that have occurred since 1970 when the Pearse-Bowden survey was done. This is reinforced by the finding that resident hunters place a noticeably higher per day value on caribou hunting in the northern regions where the quality of caribou hunting is high compared to the southern regions.

The values presented in Table 2.6 are expressed in 1981 dollars. In some instances, analysis may require expressing hunting values in more recent dollar units. For example, we may want to evaluate the desirability of an enhancement project in terms of the hunter day values it is expected to produce. If the costs of the project are expressed in 1983 dollars then the benefits must be measured in the same year's dollars. This is because the real value of a dollar as a unit of measure changes from year to year with inflation. In order to facilitate such analysis, Table 2.7 presents the values of a day spent hunting caribou expressed in 1982, 1983 and 1984 dollars. The 1981 values were inflated to 1982 values using an index of 10.8%, from 1982 to 1983 dollar values using an index of 8.0% and from 1983 to 1984 dollar values using an index of 4.0%.

TABLE 2.7

ESTIMATED DAILY VALUE OF RESIDENT CARIBOU HUNTING

EXPRESSED IN 1982, 1983 AND 1984 DOLLARS

Region Hunted	Daily Hunting Value (1982 dollars)	Daily Hunting Value (1983 dollars)	Daily Hunting Value (1984 dollars)
Vancouver Island	*	*	*
Lower Mainland	*	*	*
Thompson-Nicola	23.50	25.40	26.40
Kootenay	23.50	25.40	26.40
Cariboo	23.50	25.40	26.40
Skeena	30.20	32.70	34.00
Omineca Peace	32.80	35.40	36.80
Okanagan	*	*	*
British Columbia	30.70	33.20	34.50

* No caribou hunting in these regions.

CHAPTER 3
RESIDENT COUGAR HUNTING

3.1 Estimated Resident Cougar Hunters and Hunter Days

Hunters resident in British Columbia purchased a total of 624 cougar species licenses for the 1981-82 hunting season. Of the resident hunters responding to the survey questionnaire, 196 actively hunted cougar during 1981. Hunters were asked to indicate their preferences for hunting different species by ranking them from the most preferred to the least preferred. The results indicate that cougar was the twelfth most preferred species among all resident hunters out of thirteen choices composed of ten big game species plus waterfowl, upland game birds and small game. Resident hunters who actively hunted cougar in 1981 indicated that cougar was their fourth most preferred species. The other species making up the five most preferred species for cougar hunters were: deer (first), elk (second), moose (third) and mountain sheep (fifth).

Based on species license sales and the survey results, it is estimated that a total of 414 resident hunters actively hunted cougar during 1981. This represented less than 1% of all active resident hunters. The estimated distribution of active resident cougar hunters among the eight Environmental Management Regions is reported in the first column of Table 3.1. Resident hunters are estimated to have spent a total of 4,110 days hunting cougar in British Columbia during 1981. Resident cougar hunting effort by region is reported in the second column of Table 3.1 while the third column summarizes the average number of days resident hunters spent hunting cougar during 1981. Cougar hunter days made up 1% of the total resident species hunter days during 1981. The greatest percentage of resident cougar hunting effort took place in the Kootenay Region (40%) followed by the Vancouver Island Region (21%).

Resident hunters were asked if they hunted a particular species for a trophy, meat or both. From the responses to this question, it is estimated that 65% of resident cougar hunters hunted cougar for a trophy while 3% hunted for meat and 32% hunted for both reasons. By way of comparison, it is estimated that 7% of all resident hunting was for a trophy, 68% for meat and 25% for both. This suggests that resident cougar hunters were more likely to hunt cougar as a trophy species than the average for all species.

TABLE 3.1

ESTIMATED RESIDENT HUNTERS AND HUNTER DAYS (COUGAR), 1981

REGION HUNTED	NUMBER OF HUNTERS	NUMBER OF HUNTER DAYS (Percentage Distribution)	AVERAGE HUNTER DAYS PER HUNTER
Vancouver Island	85	850 (20.7)	10.0
Lower Mainland	38	590 (14.4)	15.5
Thompson-Nicola	72	410 (10.0)	5.7
Knotenay	133	1,640 (39.9)	12.3
Cariboo	32	190 (4.6)	5.9
Skeena	*	* (-)	*
Omineca-Peace	*	* (-)	*
Okanagan	54	430 (10.4)	8.0
TOTALS	414	4,110 (100)	9.9

*No cougar hunting in these regions.

3.2 Estimated Resident Hunter Cougar Harvest

It is estimated that 124 cougar were harvested by resident hunters in British Columbia during 1981. The distribution of the cougar harvest among the eight regions is presented in the first column of Table 3.2. The compulsory inspection reported a harvest of 152 cougar by resident hunters in 1981. The estimated harvest reported in Table 3.2 seems to under-estimate the harvest in the Vancouver Island and Thompson-Nicola Regions. However, due to the cougar hunting season, the time periods covered by the compulsory inspection and the present survey do not correspond exactly. The table also reports two measures of hunting success. The second column shows the percentage of active cougar hunters who killed at least one cougar during 1981 while the third column shows the average number of hunter days per harvest.

It is estimated that 68% of resident cougar hunters were satisfied with the cougar component of their 1981 hunting experience while 32% were not satisfied. This compares with 74% of resident cougar hunters who were satisfied with their total hunting experience and 26% who were not satisfied. For all resident hunters, it is estimated that 64% were satisfied with their hunting experience during 1981 while 36% were not. Also, it is estimated that among residents who actively hunted cougar in 1981, 72% planned to hunt cougar again the following year.

TABLE 3.2

ESTIMATED RESIDENT HUNTERS HARVEST (COUGAR), 1981

REGION HUNTED	HARVEST (Percentage Distribution)	% OF ACTIVE HUNTERS SUCCESSFUL	HUNTER DAYS PER HARVEST
Vancouver Island	36 (29.0)	40	23.6
Lower Mainland	13 (10.5)	33	45.4
Thompson-Nicola	11 (8.9)	15	37.3
Kootenay	36 (29.0)	27	45.6
Cariboo	11 (8.9)	27	17.3
Skeena	* (-)	*	*
Omineca-Peace	* (-)	*	*
Okanagan	17 (13.7)	32	25.3
TOTALS	124 (100)	29	33.1

*No cougar hunting in these regions.

3.3 Expenditures by Resident Cougar Hunters, 1981

Table 3.3 reports estimates of the cougar hunting-related expenditures made by resident cougar hunters in British Columbia and in hunters' home region during 1981. Resident cougar hunters, on average, made 66% of their provincial hunting expenditures in their region of residence. The greatest expenditures by resident cougar hunters were made on transportation and travel composing 34% of their total expenditures and 29% of expenditures in the home region. It is estimated that resident cougar hunters made 0.5% of the total expenditures of all resident hunters in British Columbia during 1981.

TABLE 3.3
ESTIMATED RESIDENT COUGAR HUNTER EXPENDITURES, 1981
(1981 Dollars)

Expenditure Category	Total Expenditures in British Columbia ($)	(%)	Expenditures in Home Region ($)
Basic and Species Licenses	17,700	(3.8)	15,600
Transportation and Travel	154,100	(33.6)	87,300
Food and Lodging	55,800	(12.1)	21,400
Taxidermy and Butchering	79,700	(17.3)	58,300
Guns, Ammunition and Hunting Equipment	113,100	(24.6)	83,200
Other Expenses	39,400	(8.6)	39,400
Totals	459,800	(100)	305,200

Resident hunter expenditures can also be described by the average amounts spent per year and per day. Table 3.4 gives estimates of average annual expenditures made by resident cougar hunters in British Columbia and in the home region during 1981. For comparison, the average annual expenditures by all resident hunters, in British Columbia and in their home regions, are shown in the third and fourth columns of Table 3.4.

As discussed in the introduction, average daily expenditures provides a more standardized basis for comparison among hunters than does annual expenditures. Table 3.5 presents estimates of the average expenditures per day in British Columbia and in the home region by resident cougar hunters during 1981. Again, for purposes of comparison, the third and fourth columns of the table present the average daily expenditures by all resident hunters.

The average daily expenditures by cougar hunters were almost twice as much as those by hunters overall. There are probably a number of reasons for this result. Cougar hunters probably have to go further afield to hunt cougar than does the typical hunter. Also, cougar was hunted predominantly as a trophy species which explains why cougar hunters incurred the highest expenditures for taxidermy and butchering. Furthermore, the use of dogs to hunt cougar increases the costs of cougar hunting.

TABLE 3.4

ESTIMATED AVERAGE ANNUAL EXPENDITURES BY RESIDENT COUGAR HUNTERS, 1981
(1981 Dollars)

EXPENDITURE CATEGORY	COUGAR HUNTERS		ALL RESIDENT HUNTERS	
	Expenditures in British Columbia ($)	Expenditures in Home Region ($)	Expenditures in British Columbia ($)	Expenditures in Home Region ($)
Basic and Species Licenses	43	38	32	24
Transportation and Travel	372	211	193	107
Food and Lodging	135	52	82	38
Taxidermy and Butchering	193	141	55	40
Guns, Ammunition and Equipment	273	201	146	111
Other Expenses	95	95	49	34
TOTALS	1,111	738	557	354

TABLE 3.5

ESTIMATED AVERAGE DAILY EXPENDITURES BY RESIDENT COUGAR HUNTERS, 1981
(1981 Dollars)

EXPENDITURE CATEGORY	COUGAR HUNTERS		ALL RESIDENT HUNTERS	
	Expenditures in British Columbia ($)	Expenditures in Home Region ($)	Expenditures in British Columbia ($)	Expenditures in Home Region ($)
Basic and Species Licences	4	4	3	3
Transportation and Travel	38	21	20	11
Food and Lodging	14	5	9	4
Taxidermy and Butchering	20	14	6	4
Guns, Ammunition and Equipment	28	20	15	11
Other Expenses	10	10	5	4
TOTALS	114	74	58	37

3.4 Estimated Economic Value of Resident Cougar Hunting

The economic values reported in this section are based on estimated equations that predict the value resident hunters place on a day spent hunting cougar. An attempt was made in estimating these equations to take account of as many factors as possible that affect the value a hunter places on a day spent hunting. Since the quality of hunting varies to some extent by location, the value of a day spent hunting was estimated, where possible, according to the region hunted. The reported values refer to the amounts that resident hunters would, on average, be willing-to-pay for a day spent hunting cougar over and above their

actual expenditures reported in section 3.3. These values can be interpreted as the net recreational gain to resident hunters of a day spent hunting cougar and as such are the appropriate measures to use in valuing cougar hunter day losses for mitigation-compensation claims or benefit-cost analyses.

The average value all resident cougar hunters placed on a day spent hunting cougar was estimated to be $34.20. The distribution of daily values for hunting cougar by the region of hunt is presented in the first column of Table 3.6. The second column of the table presents estimates of the average annual value or the so-called "consumer surplus" that resident cougar hunters derived from their cougar hunting experience during 1981. The final column of the table reports estimates of the total economic value of resident cougar hunting according to the region hunted and for the Province as a whole. These values are the products of the estimated number of hunter days from Table 3.1 and the appropriate per day values.

TABLE 3.6
ESTIMATED VALUE OF RESIDENT COUGAR HUNTING, 1981
(1981 Dollars)

Region Hunted	Daily Hunting Value ($)	Annual Hunting Value ($)	Total Hunting Value ($)	(%)
Vancouver Island	34.20	342	29,070	(20.7)
Lower Mainland	34.20	531	20,180	(14.4)
Thompson-Nicola	34.20	195	14,020	(10.0)
Kootenay	34.20	422	56,090	(39.9)
Cariboo	34.20	203	6,500	(4.6)
Skeena	*	*	*	(-)
Omineca-Peace	*	*	*	(-)
Okanagan	34.20	272	14,710	(10.4)
British Columbia	34.20	340	140,570	(100)

* No cougar hunting in these regions.

It was not possible to differentiate the value of a day spent hunting cougar according to the region hunted due to insufficient observations at the regional level. As a result, the provincial average value of $34.20 was assigned to all regions. This value compares to Pearse-Bowden's per day value of $12.20 expressed in 1981 dollars. However, not too much reliance should be placed on this value since Pearse-Bowden did not survey cougar hunters but rather estimated what a cougar

hunter day might be worth compared to surveyed species. The value of a day spent hunting cougar in the present survey was only exceeded by the daily values for mountain sheep and grizzly bear hunting. Nevertheless, cougar hunting produced the lowest total recreational value for resident hunters in 1981 of all the big game species. This was due to the very limited amount of effort devoted to cougar hunting.

The values presented in Table 3.6 are expressed in 1981 dollars. In some instances, analysis may require expressing hunting values in more recent dollar units. For example, we may want to evaluate the desirability of an enhancement project in terms of the hunter day values it is expected to produce. If the costs of the project are expressed in 1983 dollars then the benefits must be measured in the same year's dollars. This is because the real value of a dollar as a unit of measure changes from year to year with inflation. In order to facilitate such analysis, Table 3.7 presents the values of a day spent hunting cougar expressed in 1982, 1983 and 1984 dollars. The 1981 values were inflated to 1982 values using anindex of 10.8%, from 1982 to 1983 dollar values using an index of 8.0% and from 1983 to 1984 dollar values using an index of 4.0%.

TABLE 3.7
ESTIMATED DAILY VALUE OF RESIDENT COUGAR HUNTING
EXPRESSED IN 1982, 1983 AND 1984 DOLLARS

Region Hunted	Daily Hunting Value (1982 dollars)	Daily Hunting Value (1983 dollars)	Daily Hunting Value (1984 dollars)
Vancouver Island	37.90	40.90	42.50
Lower Mainland	37.90	40.90	42.50
Thompson-Nicola	37.90	40.90	42.50
Kootenay	37.90	40.90	42.50
Cariboo	37.90	40.90	42.50
Skeena	*	*	*
Omineca Peace	*	*	*
Okanagan	37.90	40.90	42.50
British Columbia	37.90	40.90	42.50

* No cougar hunting in these regions.

CHAPTER 4
RESIDENT DEER HUNTING

4.1 Estimated Resident Deer Hunters and Hunter Days

Hunters resident in British Columbia purchased a total of 138,171 deer species licenses for the 1981-82 hunting season. Of the resident hunters responding to the survey questionnaire, 10,785 actively hunted deer during 1981. Hunters were also asked to indicate their preferences for hunting different species by ranking them from the most preferred to the least preferred. The results indicate that deer was the second most preferred species among all resident hunters out of thirteen choices composed of ten big game species plus waterfowl, upland game birds and small game. Resident hunters who actively hunted deer in 1981 indicated that deer was their most preferred species. The other species making up the five most preferred species for deer hunters were: moose (second), elk (third), black bear (fourth) and upland game birds (fifth).

Based on species license sales and the survey results, it is estimated that a total of 76,132 resident hunters actively hunted deer during 1981. This represented 67% of all active resident hunters. The estimated distribution of active resident deer hunters among the eight Environmental Management Regions is reported in the first column of Table 4.1. Resident hunters are estimated to have spent a total of 751,339 days hunting deer in British Columbia during 1981. Resident deer hunting effort by region is reported in the second column of Table 4.1 while the third column summarizes the average number of days resident hunters spent hunting deer during 1981. Deer hunter days made up 51% of the total resident species hunter days during 1981. The greatest percentage of resident deer hunting effort took place in the Vancouver Island Region (23%) followed by the Kootenay (21%), Thompson-Nicola (16%) and Cariboo (14%) regions.

Resident hunters were asked if they hunted a particular species for a trophy, meat or both. From the responses to this question, it is estimated that 2% of resident deer hunters hunted deer for a trophy while 67% hunted for meat and 31% hunted for both reasons. By way of comparison, it is estimated that 7% of all resident hunting was for a trophy, 68% for meat and 25% for both. This suggests that resident deer hunters were quite typical of all hunters. This is to be expected given the large number of deer hunters.

TABLE 4.1

ESTIMATED RESIDENT HUNTERS AND HUNTER DAYS (DEER), 1981

REGION HUNTED	NUMBER OF HUNTERS	NUMBER OF HUNTER DAYS (Percentage Distribution)	AVERAGE HUNTER DAYS PER HUNTER
Vancouver Island	13,190	169,700 (22.6)	12.9
Lower Mainland	4,245	28,700 (3.8)	6.8
Thompson-Nicola	14,161	120,100 (16.0)	8.5
Kootenay	13,512	158,300 (21.1)	11.7
Cariboo	12,277	108,000 (14.4)	8.8
Skeena	3,417	29,800 (4.0)	8.7
Omineca-Peace	6,317	49,800 (6.6)	7.9
Okanagan	9,013	86,700 (11.5)	9.6
TOTALS	76,132	751,100 (100)	9.9

4.2 Estimated Resident Hunter Deer Harvest, 1981

It is estimated that 39,010 deer were harvested by resident hunters in British Columbia during 1981. The distribution of the deer harvest among the eight regions is presented in the first column of Table 4.2. The table also reports two measures of hunting success. The second column shows the percentage of active deer hunters that killed at least one deer during 1981 while the third column shows the average number of hunter days per harvest.

The harvest of deer is fairly uniform across the Province unlike other species which are predominantly harvested in one or a few regions. In addition, no region appears superior according to both measures of success, although the Vancouver Island Region does very well. It may be of interest that deer is the only species for which success rates by resident hunters were better than non-resident hunters.

It is estimated that 62% of resident deer hunters were satisfied with the deer component of their 1981 hunting experience while 38% were not satisfied. This compares with 61% of resident deer hunters who were satisfied with their total hunting experience and 39% who were not satisfied. For all resident hunters, it is estimated that 64% were satisfied with their hunting experience during 1981 while 36% were not. Also, it is estimated that among residents who actively hunted deer in 1981, 89% planned to hunt deer again the following year.

TABLE 4.2

ESTIMATED RESIDENT HUNTERS HARVEST (DEER), 1981

REGION HUNTED	HARVEST (Percentage Distribution)	% OF ACTIVE HUNTERS SUCCESSFUL	HUNTER DAYS PER HARVEST
Vancouver Island	13,063 (33.5)	54	13.0
Lower Mainland	1,645 (4.2)	27	17.5
Thompson-Nicola	6,238 (16.0)	35	19.3
Kootenay	6,980 (17.9)	40	22.7
Cariboo	3,130 (8.0)	25	34.5
Skeena	2,289 (5.9)	28	13.0
Omineca-Peace	1,345 (3.5)	19	37.1
Okanagan	4,320 (11.0)	39	20.1
TOTALS	39,010 (100)	36	19.3

4.3 Expenditures by Resident Deer Hunters, 1981

Table 4.3 reports estimates of the hunting-related expenditures made by resident deer hunters in British Columbia and in hunters' home region during 1981. Resident deer hunters, on average, made 63% of their provincial hunting expenditures in their region of residence. The greatest expenditures by resident deer hunters were made on transportation and travel, composing 35% of their total expenditures and 31% of expenditures in the home region. It is estimated that resident deer hunters made 45% of the total expenditures of all resident hunters in British Columbia during 1981.

TABLE 4.3
ESTIMATED RESIDENT DEER HUNTER EXPENDITURES, 1981
(1981 Dollars)

Expenditure Category	Total Expenditures in British Columbia ($)	(%)	Expenditures in Home Region ($)
Basic and Species Licenses	2,219,700	(5.7)	1,687,000
Transportation and Travel	13,612,200	(35.1)	7,545,200
Food and Lodging	5,734,300	(14.8)	2,558,500
Taxidermy and Butchering	3,632,600	(9.4)	2,688,100
Guns, Ammunition and Hunting Equipment	10,251,900	(26.4)	7,676,600
Other Expenses	3,311,400	(8.6)	2,206,600
Totals	38,762,600	(100)	24,362,000

Resident hunter expenditures can also be described by the average amounts spent per year and per day. Table 4.4 gives estimates of average annual expenditures made by resident deer hunters in British Columbia and in the home region during 1981. For comparison, the

average annual expenditures by all resident hunters, in British Columbia and in their home regions, are shown in the third and fourth columns of Table 4.4.

As discussed in the introduction, average daily expenditures provides a more standardized basis for comparison among hunters than does annual expenditures. Table 4.5 presents estimates of the average expenditures per day in British Columbia and in the home region by resident deer hunters during 1981. Again, for purposes of comparison, the third and fourth columns of the table present the average daily expenditures by all resident hunters.

The average daily expenditures by deer hunters was quite close to the average of all hunters. This is to be expected given the large number of deer hunters and therefore the heavy weight they receive in determining the overall average.

TABLE 4.4

ESTIMATED AVERAGE ANNUAL EXPENDITURES BY RESIDENT DEER HUNTERS, 1981
(1981 Dollars)

EXPENDITURE CATEGORY	DEER HUNTERS		ALL RESIDENT HUNTERS	
	Expenditures in British Columbia ($)	Expenditures in Home Region ($)	Expenditures in British Columbia ($)	Expenditures in Home Region ($)
Basic and Species Licenses	29	22	32	24
Transportation and Travel	179	99	193	107
Food and Lodging	75	34	82	38
Taxidermy and Butchering	48	35	55	40
Guns, Ammunition and Equipment	135	101	146	111
Other Expenses	44	29	49	34
TOTALS	510	320	557	354

TABLE 4.5
ESTIMATED AVERAGE DAILY EXPENDITURES BY RESIDENT DEER HUNTERS, 1981
(1981 Dollars)

EXPENDITURE CATEGORY	DEER HUNTERS		ALL RESIDENT HUNTERS	
	Expenditures in British Columbia ($)	Expenditures in Home Region ($)	Expenditures in British Columbia ($)	Expenditures in Home Region ($)
Basic and Species Licenses	3	2	3	3
Transportation and Travel	18	10	20	11
Food and Lodging	8	3	9	4
Taxidermy and Butchering	5	4	6	4
Guns, Ammunition and Equipment	14	10	15	11
Other Expenses	4	3	5	4
TOTALS	52	32	58	37

4.4 Estimated Economic Value of Resident Deer Hunting

The economic values reported in this section are based on estimated equations that predict the value resident hunters place on a day spent hunting deer. An attempt was made in estimating these equations to take account of as many factors as possible that affect the value a hunter places on a day spent hunting. Since the quality of hunting varies to some extent by location, the value of a day spent hunting was estimated, where possible, according to the region hunted. The reported values refer to the amounts that resident hunters would, on average, be willing to pay for a day spent hunting deer over and above their actual

expenditures reported in section 4.3. These values can be interpreted as the net recreational gain to resident hunters of a day spent hunting deer and as such are the appropriate measures to use in valuing deer hunter day losses for mitigation-compensation claims or benefit-cost analyses.

The average value all resident deer hunters placed on a day spent hunting deer was estimated to be $23.70. The distribution of daily values for hunting deer by the region of hunt is presented in the first column of Table 4.6. The second column of the table presents estimates of the average annual value or the so-called "consumer surplus" that resident deer hunters derived from their deer hunting experience during 1981. The final column of the table reports estimates of the total economic value of resident deer hunting according to the region hunted and for the Province as a whole. These values are the products of the estimated number of hunter days from Table 4.1 and the appropriate per day values.

TABLE 4.6
ESTIMATED VALUE OF RESIDENT DEER HUNTING, 1981
(1981 Dollars)

Region Hunted	Daily Hunting Value ($)	Annual Hunting Value ($)	Total Hunting Value ($)	(%)
Vancouver Island	24.10	311	4,100,640	(23.0)
Lower Mainland	25.00	170	721,650	(4.1)
Thompson-Nicola	23.00	196	2,768,480	(15.5)
Kootenay	24.50	287	3,873,210	(21.8)
Cariboo	22.10	195	2,387,630	(13.4)
Skeena	25.20	219	749,140	(4.2)
Omineca-Peace	25.40	201	1,267,570	(7.1)
Okanagan	22.40	215	1,938,160	(10.9)
British Columbia	23.70	235	17,806,480	(100)

Resident deer hunters placed an average value of $23.70 on a day spent hunting deer in 1981. The daily value of a day spent hunting deer showed a high degree of uniformity across regions which may reflect the widespread availability of deer. The relative abundance of deer and its status as a meat species may explain the comparatively low daily value that was placed on deer hunting. Of the big game species, only a day spent hunting black bear was given a lower value than deer hunting. The

average value of $23.70 estimated for a day spent hunting deer compares to Pearse-Bowden's estimate of a daily value of $24.40 expressed in 1981 dollars. While Pearse-Bowden did not actually survey deer hunters, their estimate appears to be quite accurate provided that the real value of a deer hunting day has remained fairly constant since 1970.

While resident hunters placed a relatively low value on a day spent hunting deer, deer hunting produced almost eighteen million dollars of recreational benefits for resident hunters in 1981. Deer hunting generated the greatest benefits for resident hunters of any species hunted. It is estimated to have generated about 45% of the recreational benefits received by resident hunters in 1981.

The values presented in Table 4.6 are expressed in 1981 dollars. In some instances, analysis may require expressing hunting values in more recent dollar units. For example, we may want to evaluate the desirability of a prescribed burn in terms of the hunter day values it is expected to produce. If the costs of the burn are expressed in 1983 dollars then the benefits must be measured in the same year's dollars. This is because the real value of a dollar as a unit of measure changes from year to year with inflation. In order to facilitate such analysis, Table 4.7 presents the values of a day spent hunting deer expressed in 1982, 1983 and 1984 dollars. The 1981 values were inflated to 1982 values using an index of 10.8%, from 1982 to 1983 dollar values using an index of 8.0% and from 1983 to 1984 dollar values an index of 4.0%.

TABLE 4.7

ESTIMATED DAILY VALUE OF RESIDENT DEER HUNTING

EXPRESSED IN 1982, 1983 AND 1984 DOLLARS

Region Hunted	Daily Hunting Value (1982 dollars)	Daily Hunting Value (1983 dollars)	Daily Hunting Value (1984 dollars)
Vancouver Island	26.70	28.80	30.00
Lower Mainland	27.70	29.90	31.10
Thompson-Nicola	25.50	27.50	28.60
Kootenay	27.10	29.30	30.50
Cariboo	24.50	26.50	27.60
Skeena	27.90	30.20	31.40
Omineca Peace	28.10	30.40	31.60
Okanagan	24.80	26.80	27.90
British Columbia	26.30	28.40	29.50

CHAPTER 5
RESIDENT ELK HUNTING

5.1 Estimated Resident Elk Hunters and Hunter Days

Hunters resident in British Columbia purchased a total of 15,825 elk species licenses for the 1981-82 hunting season. Of the resident hunters responding to the survey questionnaire, 3,272 actively hunted elk during 1981. Hunters were also asked to indicate their preferences for hunting different species by ranking them from the most preferred to the least preferred. The results indicate that elk was the third most preferred species among all resident hunters out of thirteen choices composed of ten big game species plus waterfowl, upland game birds and small game. Resident hunters who actively hunted elk in 1981 indicated that elk was their most preferred species. The other species making up the five most preferred species for elk hunters were: deer (second), moose (third), mountain sheep (fourth) and mountain goat (fifth).

Based on species license sales and the survey results, it is estimated that a total of 11,995 resident hunters actively hunted elk during 1981. This represented 11% of all active resident hunters. The estimated distribution of active resident elk hunters among the eight Environmental Management Regions is reported in the first column of Table 5.1. Resident hunters are estimated to have spent a total of 124,400 days hunting elk in British Columbia during 1981. Resident elk hunting effort by region is reported in the second column of Table 5.1 while the third column summarizes the average number of days resident hunters spent hunting elk during 1981. Elk hunter days made up 8% of the total resident species hunter days during 1981. The greatest percentage of resident elk hunting effort took place in the Kootenay Region (82%) followed by the Omineca-Peace Region (9%).

Resident hunters were asked if they hunted a particular species for a trophy, meat or both. From the responses to this question, it is estimated that 3% of resident elk hunters hunted elk for a trophy while 57% hunted for meat and 40% hunted for both reasons. By way of comparison, it is estimated that 7% of all resident hunting was for a trophy, 68% for meat and 25% for both. This suggests that resident elk hunters were more likely to hunt elk as a combined hunt species than the average for all species.

TABLE 5.1
ESTIMATED RESIDENT HUNTERS AND HUNTER DAYS (ELK), 1981

REGION HUNTED	NUMBER OF HUNTERS	NUMBER OF HUNTER DAYS (Percentage Distribution)	AVERAGE HUNTER DAYS PER HUNTER
Vancouver Island	338	2,800 (2.3)	8.3
Lower Mainland	*	* (-)	*
Thompson-Nicola	462	2,700 (2.2)	5.8
Kootenay	8,975	101,700 (81.7)	11.3
Cariboo	*	* (-)	*
Skeena	70	500 (0.4)	7.1
Omineca-Peace	1,364	11,300 (9.1)	8.3
Okanagan	696	5,400 (4.3)	7.8
TOTALS	11,995	124,400 (100)	10.3

* No elk hunting in these regions.

5.2 Estimated Resident Hunter Elk Harvest, 1981

It is estimated that 2,139 elk were harvested by resident hunters in British Columbia during 1981. The distribution of the elk harvest among the eight regions is presented in the first column of Table 5.2. The table also reports two measures of hunting success. The second column shows the percentage of active elk hunters that killed an elk during 1981 while the third column shows the average number of hunter days per harvest. A very high percentage (79%) of the provincial resident elk harvest took place in the Kootenay Region. However, resident elk hunters appeared to be much more successful in the Vancouver Island Region than elsewhere in the province. This may be due to the limited entry hunt in this region.

It is estimated that 53% of resident elk hunters were satisfied with the elk component of their 1981 hunting experience while 47% were not satisfied. This compares with 63% of resident elk hunters who were satisfied with their total hunting experience and 37% who were not satisfied. For all resident hunters, it is estimated that 64% were satisfied with their hunting experience during 1981 while 36% were not. Also, it is estimated that among residents who actively hunted elk in 1981, 84% planned to hunt elk again the following year.

TABLE 5.2
ESTIMATED RESIDENT HUNTER HARVEST (ELK), 1981

REGION HUNTED	HARVEST (Percentage Distribution)	% OF ACTIVE HUNTERS SUCCESSFUL	HUNTER DAYS PER HARVEST
Vancouver Island	202 (9.4)	60	13.9
Lower Mainland	* (-)	*	*
Thompson-Nicola	33 (1.6)	7	81.8
Kootenay	1,688 (78.9)	19	60.2
Cariboo	* (-)	*	*
Skeena	0 (0)	0	-
Omineca-Peace	198 (9.3)	15	57.1
Okanagan	18 (0.8)	3	300
TOTALS	2,139 (100)	18	58.1

* No elk hunting in these regions.

5.3 Expenditures by Resident Elk Hunters

Table 5.3 reports estimates of the hunting-related expenditures made by resident elk hunters in British Columbia and in hunters' home region during 1981. Resident elk hunters, on average, made 64% of their provincial hunting expenditures in their region of residence. The greatest expenditures by resident elk hunters were made on transportation and travel composing 35% of their total expenditures and 30% of expenditures in the home region. It is estimated that resident elk hunters made 9% of the total expenditures of all resident hunters in British Columbia during 1981.

TABLE 5.3
ESTIMATED RESIDENT ELK HUNTER EXPENDITURES, 1981
(1981 Dollars)

Expenditure Category	Total Expenditures in British Columbia ($)	(%)	Expenditures in Home Region ($)
Basic and Species Licenses	453,600	(5.9)	331,900
Transportation and Travel	2,676,600	(34.7)	1,480,100
Food and Lodging	1,153,400	(14.9)	552,700
Taxidermy and Butchering	804,200	(10.4)	643,500
Guns, Ammunition and Hunting Equipment	1,921,500	(24.9)	1,489,400
Other Expenses	712,000	(9.2)	476,600
Totals	7,721,300	(100)	4,974,200

Resident hunter expenditures can also be described by the average amounts spent per year and per day. Table 5.4 gives estimates of average annual expenditures made by resident elk hunters in British Columbia and in the home region during 1981. For comparison, the

average annual expenditures by all resident hunters, in British Columbia and in their home regions, are shown in the third and fourth columns of Table 5.4.

As discussed in the introduction, average daily expenditures provides a more standardized basis for comparison among hunters than does annual expenditures. Table 5.5 presents estimates of the average expenditures per day, in British Columbia and in the home region, by resident elk hunters during 1981. Again, for purposes of comparison, the third and fourth columns of the table present the average daily expenditures by all resident hunters. In comparing resident elk hunters to all resident hunters, there does not appear to be any significant differences in the average amounts spent per day or by expenditure category.

TABLE 5.4

ESTIMATED AVERAGE ANNUAL EXPENDITURES BY RESIDENT ELK HUNTERS, 1981
(1981 Dollars)

EXPENDITURE CATEGORY	ELK HUNTERS		ALL RESIDENT HUNTERS	
	Expenditures in British Columbia ($)	Expenditures in Home Region ($)	Expenditures in British Columbia ($)	Expenditures in Home Region ($)
Basic and Species Licenses	38	28	32	24
Transportation and Travel	223	123	193	107
Food and Lodging	96	46	82	38
Taxidermy and Butchering	67	54	55	40
Guns, Ammunition and Equipment	160	124	146	111
Other Expenses	59	40	49	34
TOTALS	643	415	557	354

TABLE 5.5
ESTIMATED AVERAGE DAILY EXPENDITURES BY RESIDENT ELK HUNTERS, 1981
(1981 Dollars)

EXPENDITURE CATEGORY	ELK HUNTERS		ALL RESIDENT HUNTERS	
	Expenditures in British Columbia ($)	Expenditures in Home Region ($)	Expenditures in British Columbia ($)	Expenditures in Home Region ($)
Basic and Species Licenses	4	3	3	3
Transportation and Travel	21	12	20	11
Food and Lodging	9	4	9	4
Taxidermy and Butchering	6	5	6	4
Guns, Ammunition and Equipment	15	12	15	11
Other Expenses	6	4	5	4
TOTALS	61	40	58	37

5.4 Estimated Economic Value of Resident Elk Hunting

The economic values reported in this section are based on estimated equations that predict the value resident hunters place on a day spent hunting elk. An attempt was made in estimating these equations to take account of as many factors as possible that affect the value a hunter places on a day spent hunting. Since the quality of hunting varies to some extent by location, the value of a day spent hunting was estimated, where possible, according to the region hunted. The reported values refer to the amounts that resident hunters would, on average, be willing-to-pay for a day spent hunting elk over and above their actual

expenditures reported in section 5.3. These values can be interpreted as the net recreational gain to resident hunters of a day spent hunting elk and as such are the appropriate measures to use in valuing elk hunter day losses for mitigation-compensation claims or benefit-cost analyses.

The average value all resident elk hunters placed on a day spent hunting elk was estimated to be $30.50. The distribution of daily values for hunting elk by the region of hunt is presented in the first column of Table 5.6. The second column of the table presents estimates of the average annual value or the so-called "consumer surplus" that resident elk hunters derived from their elk hunting experience during 1981. The final column of the table reports estimates of the total economic value of resident elk hunting according to the region hunted and for the Province as a whole. These values are the products of the estimated number of hunter days from Table 5.1 and the appropriate per day values.

TABLE 5.6
ESTIMATED VALUE OF RESIDENT ELK HUNTING, 1981
(1981 Dollars)

Region Hunted	Daily Hunting Value ($)	Annual Hunting Value ($)	Total Hunting Value ($)	(%)
Vancouver Island	36.90	306	103,320	(2.7)
Lower Mainland	*	*	*	(-)
Thompson-Nicola	22.40	131	60,480	(1.6)
Kootenay	30.60	347	3,112,020	(82.0)
Cariboo	*	*	*	(-)
Skeena	28.70	205	14,350	(0.4)
Omineca-Peace	32.10	266	362,370	(9.6)
Okanagan	25.90	201	139,860	(3.7)
British Columbia	30.50	316	3,792,760	(100)

* No elk hunting in these regions.

The average provincial value of $30.50 found for a day spent hunting elk compares to Pearse-Bowden's estimate of a daily value of $36.60 expressed in 1981 dollars. However, Pearse-Bowden did not actually survey elk hunters but rather based their estimate on what an elk hunter day might be worth compared to the results of surveyed species hunters. As a consequence, not too much reliance should be

placed on their result. A fairly high degree of variability in the daily value by region hunted was found in the present survey. This might reflect differences in the quality of elk hunting by region. For example, the comparatively high value for elk hunting in the Vancouver Island Region may be because it is largely limited entry hunting. Finally, elk hunting produced almost four million dollars of net recreational benefits for resident hunters. This was only exceeded by the benefits produced by deer and moose hunting.

The values presented in Table 5.6 are expressed in 1981 dollars. In some instances, analysis may require expressing hunting values in more recent dollar units. For example, we may want to evaluate the desirability of a prescribed burn in terms of the hunter day values it is expected to produce. If the costs of the burn are expressed in 1983 dollars then the benefits must be measured in the same year's dollars. This is because the real value of a dollar as a unit of measure changes from year to year with inflation. In order to facilitate such analysis, Table 5.7 presents the values of a day spent hunting elk expressed in 1982, 1983 and 1984 dollars. The 1981 values were inflated to 1982 values using an index of 10.8%, from 1982 to 1983 dollar values using an index of 8.0% and from 1983 to 1984 dollar values using an index of 4.0%.

TABLE 5.7

ESTIMATED DAILY VALUE OF RESIDENT ELK HUNTING

EXPRESSED IN 1982, 1983 and 1984 DOLLARS

Region Hunted	Daily Hunting Value (1982 dollars)	Daily Hunting Value (1983 dollars)	Daily Hunting Value (1984 dollars)
Vancouver Island	40.90	44.20	46.00
Lower Mainland	*	*	*
Thompson-Nicola	24.80	26.80	27.90
Kootenay	33.90	36.60	38.10
Cariboo	*	*	*
Skeena	31.80	37.10	38.60
Omineca Peace	35.60	38.40	39.90
Okanagan	28.70	31.00	32.20
British Columbia	33.80	36.50	38.00

* No elk hunting in these regions.

CHAPTER 6
RESIDENT GRIZZLY BEAR HUNTING

6.1 Estimated Resident Grizzly Bear Hunters and Hunter Days

Hunters resident in British Columbia purchased a total of 2,158 grizzly bear species licenses for the 1981-82 hunting season. Of the resident hunters responding to the survey questionnaire, 778 actively hunted grizzly bear during 1981. Hunters were also asked to indicate their preferences for hunting different species by ranking them from the most preferred to the least preferred. The results indicate that grizzly bear was the ninth most preferred species among all resident hunters out of thirteen choices composed of ten big game species plus waterfowl, upland game birds and small game. Resident hunters who actively hunted grizzly bear in 1981 indicated that grizzly bear was their second most preferred species. The other species making up the five most preferred species for grizzly bear hunters were: moose (first), mountain sheep (third), deer (fourth) and elk (fifth).

Based on species license sales and the survey results, it is estimated that a total of 1,416 resident hunters actively hunted grizzly bear during 1981. This represented 1% of all active resident hunters. The estimated distribution of active resident grizzly bear hunters among the eight Environmental Management Regions is reported in the first column of Table 6.1. Resident hunters are estimated to have spent a total of 13,130 days hunting grizzly bear in British Columbia during 1981. Resident grizzly bear hunting effort by region is reported in the second column of Table 6.1 while the third column summarizes the average number of days resident hunters spent hunting grizzly bear during 1981. Grizzly bear hunter days made up 1% of the total resident species hunter days during 1981. The greatest percentage of resident grizzly bear hunting effort took place in the Omineca-Peace Region (37%) followed by the Skeena (29%) and Kootenay (25%) regions.

Resident hunters were asked if they hunted a particular species for a trophy, meat or both. From the responses to this question, it is estimated that 90% of resident grizzly bear hunters hunted grizzly bear for a trophy while only 1% hunted for meat and 9% hunted for both reasons. By way of comparison, it is estimated that 7% of all resident hunting was for a trophy, 68% for meat and 25% for both. This suggests that resident grizzly bear hunters were more likely to hunt grizzly bear as a trophy species than the average for all species.

TABLE 6.1
ESTIMATED RESIDENT HUNTERS AND HUNTER DAYS (GRIZZLY BEAR), 1981

REGION HUNTED	NUMBER OF HUNTERS	NUMBER OF HUNTER DAYS (PERCENTAGE DISTRIBUTION)	AVERAGE HUNTER DAYS PER HUNTER
Vancouver Island	15	80 (0.6)	5.3
Lower Mainland	11	70 (0.5)	6.4
Thompson-Nicola	38	260 (2.0)	6.8
Kootenay	348	3,280 (25.0)	9.4
Cariboo	84	620 (4.7)	7.4
Skeena	400	3,810 (29.1)	9.5
Omineca-Peace	487	4,810 (36.6)	9.9
Okanagan	33	200 (1.5)	6.1
TOTALS	1,416	13,130 (100)	9.3

Grizzly bear hunting is restricted to Management Units 14 and 15 in the Vancouver Island Region and is limited entry hunting in the Lower Mainland and Kootenay regions.

6.2 Estimated Resident Hunter Grizzly Bear Harvest, 1981

It is estimated that 170 grizzly bear were harvested by resident hunters in British Columbia during 1981. The distribution of the grizzly bear harvest among the eight regions is presented in the first column of Table 6.2. The compulsory inspection reported a harvest of 226 grizzly bear by resident hunters during 1981. It would appear that the estimated harvest in Table 6.2 for the Omineca-Peace Region is most seriously under-estimated compared to the compulsory inspection results. The table also reports two measures of hunting success. The second column snows the percentage of active grizzly bear hunters who killed a grizzly bear during 1981 while the third column shows the average number of hunter days per harvest.

The highest percentage of the resident hunter, grizzly bear harvest took place in the Skeena Region (32%) followed by the Omineca-Peace (30%) and Kootenay (24%) regions. Of these three regions, success rates were highest in the Skeena Region and lowest in the Omineca-Peace Region. However, the latter result may be explained by biases in the estimated harvest. It is difficult to say anything meaningful about the other regions due to the very limited sample sizes.

It is estimated that 59% of resident grizzly bear hunters were satisfied with the grizzly bear component of their 1981 hunting experience while 41% were not satisfied. This compares with 71% of resident grizzly bear hunters who were satisfied with their total hunting experience and 29% who were not satisfied. For all resident hunters, it is estimated that 64% were satisfied with their hunting experience during 1981 while 36% were not. Also, it is estimated that among residents who actively hunted grizzly bear in 1981, 58% planned to hunt grizzly again the following year.

TABLE 6.2

ESTIMATED RESIDENT HUNTERS HARVEST (GRIZZLY BEAR), 1981

REGION HUNTED	HARVEST (PERCENT DISTRIBUTION)	% OF ACTIVE HUNTERS SUCCESSFUL	HUNTER DAYS PER HARVEST
Vancouver Island	2 (1.2)	13	40.0
Lower Mainland	2 (1.2)	17	35.0
Thompson-Nicola	2 (1.2)	5	130.0
Kootenay	40 (23.5)	12	82.0
Cariboo	9 (5.3)	11	68.9
Skeena	55 (32.3)	14	69.3
Omineca-Peace	51 (30.0)	10	94.3
Okanagan	9 (5.3)	28	22.2
TOTALS	170 (100)	12	77.2

Grizzly bear hunting is restricted to Management Units 14 and 15 in the Vancouver Island Region and is limited entry hunting in the Lower Mainland and Kootenay regions. Also, in the Kootenay Region hunters may take no more than one grizzly every five years.

6.3 Expenditures by Resident Grizzly Bear Hunters, 1981

Table 6.3 reports estimates of the hunting-related expenditures made by resident grizzly bear hunters in British Columbia and in hunters' home region during 1981. Resident grizzly bear hunters, on average, made 62% of their provincial hunting expenditures in their region of residence. The greatest expenditures by resident grizzly bear hunters were made on transportation and travel composing 31% of their total expenditures and 25% of expenditures in the home region. It is estimated that resident grizzly bear hunters made 2% of the total expenditures of all resident hunters in British Columbia during 1981.

TABLE 6.3
ESTIMATED RESIDENT GRIZZLY BEAR HUNTER EXPENDITURES, 1981
(1981 Dollars)

Expenditure Category	Total Expenditures in British Columbia ($)	(%)	Expenditures in Home Region ($)
Basic and Species Licenses	93,600	(5.7)	62,800
Transportation and Travel	502,700	(30.6)	255,500
Food and Lodging	216,700	(13.2)	107,200
Taxidermy and Butchering	251,900	(15.4)	187,100
Guns, Ammunition and Hunting Equipment	430,700	(26.3)	308,400
Other Expenses	145,200	(8.8)	100,500
Totals	1,640,800	(100)	1,021,500

Resident hunter expenditures can also be described by the average amounts spent per year and per day. Table 6.4 gives estimates of average annual expenditures made by resident grizzly bear hunters in British Columbia and in the home region during 1981. For comparison, the average annual expenditures by all resident hunters in British Columbia and in their home regions are shown in the third and fourth columns of Table 6.4.

As discussed in the introduction, average daily expenditures provides a more standardized basis for comparison among hunters than does annual expenditures. Table 6.5 presents estimates of the average expenditures per day, in British Columbia and in the home region, by resident grizzly bear hunters during 1981. Again, for purposes of comparison, the third and fourth columns of the table present the average daily expenditures by all resident hunters.

Expenditures by resident grizzly bear hunters are well above the average expenditures by all resident hunters. After mountain sheep, grizzly bear would appear to be the most expensive species to hunt. There are probably a number of reasons for this. The grizzly bear species license is the most expensive of all species licenses. It is probably the case that hunters have to travel further afield to hunt grizzly, thereby increasing their costs of transportation and accommodation. Also, since a very high proportion of hunters seek grizzly as trophy, their taxidermy costs are greater than what would be spent by the typical hunter.

TABLE 6.4
ESTIMATED AVERAGE ANNUAL EXPENDITURES BY RESIDENT
GRIZZLY BEAR HUNTERS, 1981
(1981 Dollars)

EXPENDITURE CATEGORY	GRIZZLY BEAR HUNTERS		ALL RESIDENT HUNTERS	
	Expenditures in British Columbia ($)	Expenditures in Home Region ($)	Expenditures in British Columbia ($)	Expenditures in Home Region ($)
Basic and Species Licenses	66	44	32	24
Transportation and Travel	355	180	193	107
Food and Lodging	153	76	82	38
Taxidermy and Butchering	178	132	55	40
Guns, Ammunition and Equipment	304	218	146	111
Other Expenses	103	71	49	34
TOTALS	1,159	721	557	354

TABLE 6.5
ESTIMATED AVERAGE DAILY EXPENDITURES BY RESIDENT
GRIZZLY BEAR HUNTERS, 1981
(1981 Dollars)

EXPENDITURE CATEGORY	GRIZZLY BEAR HUNTERS		ALL RESIDENT HUNTERS	
	Expenditures in British Columbia ($)	Expenditures in Home Region ($)	Expenditures in British Columbia ($)	Expenditures in Home Region ($)
Basic and Species Licenses	7	5	3	3
Transportation and Travel	38	19	20	11
Food and Lodging	17	8	9	4
Taxidermy and Butchering	19	14	6	4
Guns, Ammunition and Equipment	33	23	15	11
Other Expenses	11	8	5	4
TOTALS	125	77	58	37

6.4 Estimated Economic Value of Resident Grizzly Bear Hunting

The economic values reported in this section are based on estimated equations that predict the value resident hunters place on a day spent hunting grizzly bear. An attempt was made in estimating these equations to take account of as many factors as possible that affect the value a hunter places on a day spent hunting. Since the quality of hunting varies to some extent by location, the value of a day spent hunting was estimated, where possible, according to the region hunted. The reported values refer to the amounts that resident hunters would, on average, be willing to pay for a day spent hunting grizzly bear over and above their

actual expenditures reported in section 6.3. These values can be interpreted as the net recreational gain to resident hunters of a day spent hunting grizzly bear and as such are the appropriate measures to use in valuing grizzly bear hunter day losses for mitigation-compensation claims or benefit-cost analyses.

The average value all resident grizzly bear hunters placed on a day spent hunting grizzly bear was estimated to be $42.60. The distribution of daily values for hunting grizzly bear by the region of hunt is presented in the first column of Table 6.6. The second column of the table presents estimates of the average annual value or the so-called "consumer surplus" that resident grizzly bear hunters derived from their grizzly bear hunting experience during 1981. The final column of the table reports estimates of the total economic value of resident grizzly bear hunting according to the region hunted and for the Province as a whole. These values are the products of the estimated number of hunter days from Table 6.1 and the appropriate per day values.

TABLE 6.6

ESTIMATED VALUE OF RESIDENT GRIZZLY BEAR HUNTING, 1981

(1981 Dollars)

Region Hunted	Daily Hunting Value ($)	Annual Hunting Value ($)	Total Hunting Value ($)	(%)
Vancouver Island	44.90	239	3,590	(0.6)
Lower Mainland	44.90	285	3,140	(0.6)
Thompson-Nicola	44.90	307	11,670	(2.1)
Kootenay	33.50	316	109,880	(19.7)
Cariboo	44.90	331	27,840	(5.0)
Skeena	45.40	432	172,790	(30.9)
Omineca-Peace	45.90	453	220,780	(39.5)
Okanagan	44.90	272	8,980	(1.6)
British Columbia	42.60	395	558,850	(100)

The average value for a day spent hunting grizzly bear of $42.60 was exceeded only by the daily value that resident hunters would be willing to pay for mountain sheep hunting. This reflects the general finding that a day spent hunting a trophy species is more highly valued than a day spent hunting a meat species. Furthermore, it appears that on average hunters of trophy species had significantly higher incomes than hunters of meat species. For example, resident grizzly bear

hunters had incomes that averaged between $26,500 and $29,000 depending upon region of hunt, whereas deer hunters had incomes averaging between $22,700 and $25,000.

Pearse-Bowden estimated that the value of a day spent hunting grizzly bear was $31.70, in 1981 dollars, based on their 1970 survey. The seeming increase in the value of a day spent hunting grizzly bear might reflect the substantially increased amount of grizzly bear hunting activity by residents since 1970. It seems that resident hunters acquired a much greater preference for grizzly bear hunting during the 70's and attached a higher value to grizzly as a trophy.

It should be noted that the value of a day spent hunting grizzly bear in the Vancouver Island, Lower Mainland, Thompson-Nicola, Cariboo and Okanagan regions is the average over all five regions since there were insufficient observations to determine individual values for each region.

The values presented in Table 6.6 are expressed in 1981 dollars. In some instances, analysis may require expressing hunting values in more recent dollars. For example, we may want to evaluate the desirability of an enhancement project in terms of the hunter day values it is expected to produce. If the costs of the project are expressed in 1983 dollars then the benefits must be measured in the same year's dollars. This is because the real value of a dollar as a unit of measure changes from year to year with inflation. In order to facilitate such analysis, Table 6.7 presents the values of a day spent hunting grizzly bear expressed in 1982, 1983 and 1984 dollars. The 1981 values were inflated to 1982 values using an index of 10.8%, from 1982 to 1983 dollar values using an index of 8.0% and from 1983 to 1984 dollar values using an index of 4.0%.

TABLE 6.7
ESTIMATED DAILY VALUE OF RESIDENT GRIZZLY BEAR HUNTING
EXPRESSED IN 1982, 1983 AND 1984 DOLLARS

Region Hunted	Daily Hunting Value (1982 dollars)	Daily Hunting Value (1983 dollars)	Daily Hunting Value (1984 dollars)
Vancouver Island	49.80	53.70	55.90
Lower Mainland	49.80	53.70	55.90
Thompson-Nicola	49.80	53.70	55.90
Kootenay	37.10	40.10	41.70
Cariboo	49.80	53.70	55.90
Skeena	50.30	54.30	56.50
Omineca Peace	49.80	53.70	55.90
Okanagan	49.80	53.70	55.90
British Columbia	47.20	51.00	53.00

CHAPTER 7
RESIDENT MOOSE HUNTING

7.1 Estimated Resident Moose Hunters and Hunter Days

Hunters resident in British Columbia purchased a total of 63,355 moose species licenses for the 1981-82 hunting season. Of the resident hunters responding to the survey questionnaire, 8,722 actively hunted moose during 1981. Hunters were also asked to indicate their preferences for hunting different species by ranking them from the most preferred to the least preferred. The results indicate that moose was the most preferred species among all resident hunters out of thirteen choices composed of ten big game species plus waterfowl, upland game birds and small game. Resident hunters who actively hunted moose in 1981 indicated that moose was their most preferred species. The other species making up the five most preferred species for moose hunters were: deer (second), elk (third), black bear (fourth) and mountain sheep (fifth).

Based on species license sales and the survey results, it is estimated that a total of 49,037 resident hunters actively hunted moose during 1981. This represented 43% of all active resident hunters. The estimated distribution of active resident moose hunters among the eight Environmental Management Regions is reported in the first column of Table 7.1. Resident hunters are estimated to have spent a total of 462,500 days hunting moose in British Columbia during 1981. Resident moose hunting effort by region is reported in the second column of Table 7.1 while the third column summarizes the average number of days resident hunters spent hunting moose during 1981. Moose hunter days made up 31% of the total resident species hunter days during 1981. The greatest percentage of resident moose hunting effort took place in the Omineca-Peace Region (30%) followed by the Cariboo (23%) and Skeena (19%) regions.

Resident hunters were asked if they hunted a particular species for a trophy, meat or both. From the responses to this question, it is estimated that 1% of resident moose hunters hunted moose for a trophy while 90% hunted for meat and 9% hunted for both reasons. By way of comparison, it is estimated that 7% of all resident hunting was for a trophy, 63% for meat and 25% for both. This suggests that resident moose hunters were more likely to hunt moose as a meat species than the average for all species.

TABLE 7.1

ESTIMATED RESIDENT HUNTERS AND HUNTER DAYS (MOOSE), 1981

REGION HUNTED	NUMBER OF HUNTERS	NUMBER OF HUNTER DAYS (PERCENTAGE DISTRIBUTION)	AVERAGE HUNTER DAYS PER HUNTER
Vancouver Island	*	* (-)	*
Lower Mainland	*	* (-)	*
Thompson-Nicola	7,812	61,700 (13.3)	7.9
Kootenay	6,188	57,600 (12.5)	9.3
Cariboo	11,430	105,000 (22.7)	9.2
Skeena	8,147	86,600 (18.7)	10.6
Omineca-Peace	13,588	138,200 (29.9)	10.2
Okanagan	1,872	13,400 (2.9)	7.2
TOTALS	49,037	462,500 (100)	9.4

*No moose hunting in these regions.

7.2 Estimated Resident Hunter Moose Harvest

It is estimated that 13,088 moose were harvested by resident hunters in British Columbia during 1981. The distribution of the moose harvest among the eight regions is presented in the first column of Table 7.2. The table also reports two measures of hunting success. The second column shows the percentage of active moose hunters that killed a moose during 1981 while the third column shows the average number of hunter days per harvest.

The greatest percentage of the provincial resident moose harvest took place in the Omineca-Peace Region (41%) followed by the Cariboo (21%) and Skeena (20%) regions. In addition, the Omineca-Peace Region had the best resident moose hunter success rates of all the regions. This was the case for both measures of success.

It is estimated that 55% of resident moose hunters were satisfied with the moose component of their 1981 hunting experience while 45% were not satisfied. This compares with 61% of resident moose hunters who were satisfied with their total hunting experience and 39% who were not satisfied. For all resident hunters, it is estimated that 64% were satisfied with their hunting experience during 1981 while 36% were not. Also, it is estimated that among residents who actively hunted moose in 1981, 87% planned to hunt moose again the following year.

TABLE 7.2

ESTIMATED RESIDENT HUNTERS HARVEST (MOOSE), 1981

REGION HUNTED	HARVEST (PERCENTAGE DISTRIBUTION)	% OF ACTIVE HUNTERS SUCCESSFUL	HUNTER DAYS PER HARVEST
Vancouver Island	* (-)	*	*
Lower Mainland	* (-)	*	*
Thompson-Nicola	1,208 (9.3)	15	51.1
Kootenay	854 (6.5)	14	67.4
Cariboo	2,799 (21.4)	25	37.5
Skeena	2,596 (19.8)	32	33.4
Omineca-Peace	5,423 (41.4)	40	25.5
Okanagan	208 (1.6)	11	64.4
TOTALS	13,088 (100)	27	35.3

*No moose hunting in these regions.

7.3 Expenditures by Resident Moose Hunters

Table 7.3 reports estimates of the moose hunting-related expenditures made by resident moose hunters in British Columbia and in hunters' home region during 1981. Resident moose hunters, on average, made 63% of their provincial hunting expenditures in their region of residence. The greatest expenditures by resident moose hunters were made on transportation and travel composing 35% of their total expenditures and 31% of expenditures in the home region. It is estimated that resident moose hunters made 30% of the total expenditures of all resident hunters in British Columbia during 1981.

TABLE 7.3
ESTIMATED RESIDENT MOOSE HUNTER EXPENDITURES, 1981
(1981 Dollars)

Expenditure Category	Total Expenditures in British Columbia ($)	(%)	Expenditures in Home Region ($)
Basic and Species Licenses	1,538,700	(5.9)	1,174,000
Transportation and Travel	9,154,200	(35.4)	5,101,300
Food and Lodging	3,917,100	(15.2)	1,792,300
Taxidermy and Butchering	2,339,900	(9.1)	1,706,400
Guns, Ammunition and Hunting Equipment	6,681,600	(25.9)	5,023,700
Other Expenses	2,213,800	(8.5)	1,451,000
Totals	25,845,300	(100)	16,248,700

Resident hunter expenditures can also be described by the average amounts spent per year and per day. Table 7.4 gives estimates of average annual expenditures made by resident moose hunters in British Columbia and in the home region during 1981. For comparison, the average annual expenditures by all resident hunters in British Columbia and in their home regions are shown in the third and fourth columns of Table 7.4.

As discussed in the introduction, average daily expenditures provides a more standardized basis for comparison among hunters than does annual expenditures. Table 7.5 presents estimates of the average expenditures per day in British Columbia and in the home region by resident moose hunters during 1981. Again, for purposes of comparison, the third and fourth columns of the table present the average daily expenditures by all resident hunters. The average daily expenditures by moose hunters coincides almost exactly with the average daily expenditures by all hunters. This might be expected given the large number of moose hunters and hunter days and the weight that they have in determining the average for all hunters.

TABLE 7.4
ESTIMATED AVERAGE ANNUAL EXPENDITURES BY RESIDENT MOOSE HUNTERS, 1981
(1981 Dollars)

EXPENDITURE CATEGORY	MOOSE HUNTERS		ALL RESIDENT HUNTERS	
	Expenditures in British Columbia ($)	Expenditures in Home Region ($)	Expenditures in British Columbia ($)	Expenditures in Home Region ($)
Basic and Species Licenses	31	24	32	24
Transportation and Travel	187	104	193	107
Food and Lodging	80	37	82	38
Taxidermy and Butchering	48	35	55	40
Guns, Ammunition and Equipment	136	102	146	111
Other Expenses	45	30	49	34
TOTALS	527	332	557	354

TABLE 7.5

ESTIMATED AVERAGE DAILY EXPENDITURES BY RESIDENT MOOSE HUNTERS, 1981

(1981 Dollars)

EXPENDITURE CATEGORY	MOOSE HUNTERS		ALL RESIDENT HUNTERS	
	Expenditures in British Columbia ($)	Expenditures in Home Region ($)	Expenditures in British Columbia ($)	Expenditures in Home Region ($)
Basic and Species Licenses	3	3	3	3
Transportation and Travel	20	11	20	11
Food and Lodging	9	4	9	4
Taxidermy and Butchering	5	4	6	4
Guns, Ammunition and Equipment	15	11	15	11
Other Expenses	5	3	5	4
TOTALS	57	36	58	37

7.4 Estimated Economic Value of Resident Moose Hunting

The economic values reported in this section are based on estimated equations that predict the value resident hunters place on a day spent hunting moose. An attempt was made in estimating these equations to take account of as many factors as possible that affect the value a hunter places on a day spent hunting. Since the quality of hunting varies to some extent by location, the value of a day spent hunting was estimated, where possible, according to the region hunted. The reported values refer to the amounts that resident hunters would, on average, be willing to pay for a day spent hunting moose over and above their actual

expenditures reported in section 7.3. These values can be interpreted as the net recreational gain to resident hunters of a day spent hunting moose and as such are the appropriate measures to use in valuing moose hunter day losses for mitigation-compensation claims or benefit-cost analyses.

The average value all resident moose hunters placed on a day spent hunting moose was estimated to be $30.00. The distribution of daily values for hunting moose by the region of hunt is presented in the first column of Table 7.6. The second column of the table presents estimates of the average annual value or the so-called "consumer surplus" that resident moose hunters derived from their moose hunting experience during 1981. The final column of the table reports estimates of the total economic value of resident moose hunting according to the region hunted and for the Province as a whole. These values are the products of the estimated number of hunter days from Table 7.1 and the appropriate per day values.

TABLE 7.6
ESTIMATED VALUE OF RESIDENT MOOSE HUNTING, 1981
(1981 Dollars)

Region Hunted	Daily Hunting Value ($)	Annual Hunting Value ($)	Total Hunting Value ($)	(%)
Vancouver Island	*	*	*	(-)
Lower Mainland	*	*	*	(-)
Thompson-Nicola	26.20	207	1,616,540	(11.7)
Kootenay	26.20	244	1,509,120	(10.9)
Cariboo	30.10	277	3,160,500	(22.8)
Skeena	31.90	339	2,762,540	(19.9)
Omineca-Peace	32.40	330	4,477,680	(32.3)
Okanagan	24.90	178	333,660	(2.4)
British Columbia	30.00	283	13,860,040	(100)

* No moose hunting in these regions.

The average provincial value of $30.00 for a day spent hunting moose compares to Pearse-Bowden's estimated daily value of $36.60 in 1981 dollars. Again, Pearse-Bowden's estimate might be questioned since they did not survey moose hunters but rather derived what they felt was a reasonable value for a moose hunter day in comparison to the results for surveyed species hunters. However, if their results are an accurate

measure of the value of moose hunting in 1970, then this would suggest there has been a deterioration in the real value of moose hunting since that year.

Moose hunting generated almost fourteen million dollars worth of net recreational benefits for resident hunters in 1981. This represents about 35% of the total recreational value obtained by resident hunters in that year. Only deer hunting provided greater aggregate benefits province-wide than moose hunting.

The values presented in Table 7.6 are expressed in 1981 dollars. In some instances, analysis may require expressing hunting values in more recent dollar units. For example, we may want to evaluate the desirability of a prescribed burn in terms of the hunter day values it is expected to produce. If the costs of the burn are expressed in 1983 dollars then the benefits must be measured in the same year's dollars. This is because the real value of a dollar as a unit of measure changes from year to year with inflation. In order to facilitate such analysis, Table 7.7 presents the values of a day spent hunting moose expressed in 1982, 1983 and 1984 dollars. The 1981 values were inflated to 1982 values using an index of 10.8%, from 1982 to 1983 dollar values using an index of 8.0% and 1983 to 1984 dollars values using an index of 4.0%.

TABLE 7.7
ESTIMATED DAILY VALUE OF RESIDENT MOOSE HUNTING
EXPRESSED IN 1982, 1983 AND 1984 DOLLARS

Region Hunted	Daily Hunting Value (1982 dollars)	Daily Hunting Value (1983 dollars)	Daily Hunting Value (1984 dollars)
Vancouver Island	*	*	*
Lower Mainland	*	*	*
Thompson-Nicola	29.00	31.40	32.70
Kootenay	29.00	31.40	32.70
Cariboo	33.40	36.00	37.40
Skeena	35.40	38.20	39.70
Omineca Peace	35.90	38.80	40.40
Okanagan	27.60	29.80	31.00
British Columbia	33.20	35.90	37.30

* No moose hunting in these regions.

CHAPTER 8
RESIDENT MOUNTAIN GOAT HUNTING

8.1 Estimated Resident Mountain Goat Hunters and Hunter Days

Hunters resident in British Columbia purchased a total of 2,232 mountain goat species licenses for the 1981-82 hunting season. Of the resident hunters responding to the survey questionnaire, 819 actively hunted mountain goat during 1981. Hunters were also asked to indicate their preferences for hunting different species by ranking them from the most preferred to the least preferred. The results indicate that among all resident hunters mountain goat was the seventh most preferred species out of thirteen choices composed of ten big game species plus waterfowl, upland game birds and small game. Resident hunters who actively hunted mountain goat in 1981 indicated that mountain goat was their third most preferred species. The other species making up the five most preferred species for mountain goat hunters were: moose (first), deer (second), mountain sheep (fourth) and elk (fifth).

Based on species license sales and the survey results, it is estimated that a total of 1,400 resident hunters actively hunted mountain goat during 1981. This represented 1% of all active resident hunters. The estimated distribution of active resident mountain goat hunters among the eight Environmental Management Regions is reported in the first column of Table 8.1. Resident hunters are estimated to have spent a total of 8,440 days hunting mountain goat in British Columbia during 1981. Resident mountain goat hunting effort by region is reported in the second column of Table 8.1 while the third column summarizes the average number of days resident hunters spent hunting mountain goat during 1981. Mountain goat hunter days made up under 1% of the total resident species hunter days during 1981. The greatest percentage of resident mountain goat hunting effort took place in the Skeena Region (44%) followed by the Omineca-Peace Region (32%).

Resident hunters were asked if they hunted a particular species for a trophy, meat or both. From the responses to this question, it is estimated that 27% of resident mountain goat hunters hunted mountain goat for a trophy while 15% hunted for meat and 58% hunted for both reasons. By way of comparison, it is estimated that 7% of all resident hunting was for a trophy, 68% for meat and 25% for both. This suggests that resident mountain goat hunters were less likely to hunt mountain goat as a meat species than the average for all species.

TABLE 8.1

ESTIMATED RESIDENT HUNTERS AND HUNTER DAYS (MOUNTAIN GOAT), 1981

REGION HUNTED	NUMBER OF HUNTERS	NUMBER OF HUNTER DAYS (PERCENTAGE DISTRIBUTION)	AVERAGE HUNTER DAYS PER HUNTER
Vancouver Island	27	160 (1.9)	5.9
Lower Mainland	77	310 (3.7)	4.0
Thompson-Nicola	24	100 (1.2)	4.2
Kootenay	164	1,010 (12.0)	6.2
Cariboo	75	300 (3.6)	4.0
Skeena	623	3,750 (44.4)	6.0
Omineca-Peace	374	2,680 (31.7)	7.2
Okanagan	36	130 (1.5)	3.6
TOTALS	1,400	8,440 (100)	6.0

Mountain goat hunting takes place only in Management Units 14 and 15 on the mainland portion of the Vancouver Island Region and under limited entry hunting in the Thompson Nicola Region.

8.2 Estimated Resident Hunter Mountain Goat Harvest

It is estimated that 444 mountain goats were harvested by resident hunters in British Columbia during 1981. The distribution of the mountain goat harvest among the eight regions is presented in the first column of Table 8.2. The compulsory inspection reported a harvest of 392 mountain goats by resident hunters. The harvest of mountain goat by resident hunters estimated from the survey is greater than the compulsory inspection results. The Hunter Sample for 1981-82, adjusted to the actual number of license holders, also gives a larger estimate of harvest than the compulsory inspection. These differences may be because there are not the same incentives for meat hunters to abide by the compulsory inspection requirements as for trophy hunters. A high percentage of resident mountain goat hunters indicated that they hunted mountain goat solely for meat compared to hunters of the other compulsory inspection species, grizzly, cougar and mountain sheep. In Table 8.2, the harvests for the Skeena Region, and to a lesser extent the Kootenay Region, are greater than given in the compulsory inspection.

The table also reports two measures of hunting success. The second column shows the percentage of active mountain goat hunters that killed a mountain goat during 1981 while the third column shows the average number of hunter days per harvest. A very high percent (47%) of the resident mountain goat harvest took place in the Skeena Region. It was followed by the Kootenay and Omineca-Peace regions with 20% and 18%, respectively, of the provincial resident harvest. The best mountain goat hunter success rates were achieved in the Kootenay Region.

It is estimated that 68% of resident mountain goat hunters were satisfied with the mountain goat component of their 1981 hunting experience while 32% were not satisfied. This compares with 70% of resident mountain goat hunters who were satisfied with their total hunting experience and 30% who were not satisfied. For all resident hunters, it is estimated that 64% were satisfied with their hunting experience during 1981 while 36% were not. Also, it is estimated that among residents who actively hunted mountain goat in 1981, 68% planned to hunt mountain goat again the following year.

TABLE 8.2

ESTIMATED RESIDENT HUNTERS HARVEST (MOUNTAIN GOAT), 1981

REGION HUNTED	HARVEST (PERCENTAGE DISTRIBUTION)	% OF ACTIVE HUNTERS SUCCESSFUL	HUNTER DAYS PER HARVEST
Vancouver Island	9 (2.0)	31	17.8
Lower Mainland	24 (5.4)	31	12.9
Thompson-Nicola	2 (0.5)	7	25.0
Kootenay	87 (19.6)	53	11.6
Cariboo	17 (3.8)	23	17.6
Skeena	207 (46.6)	33	18.1
Omineca-Peace	79 (17.8)	21	33.9
Okanagan	19 (4.3)	52	6.8
TOTALS	444 (100)	32	19.0

Mountain goat hunting only takes place in Management Units 14 and 15 on the mainland of the Vancouver Island Region and under limited entry hunting in the Thompson-Nicola Region.

8.3 Expenditures by Resident Mountain Goat Hunters, 1981

Table 8.3 reports estimates of the hunting-related expenditures made by resident mountain goat hunters in British Columbia and in hunters' home region during 1981. Resident mountain goat hunters, on average, made 60% of their provincial hunting expenditures in their region of residence. The greatest expenditures by resident mountain goat hunters were made on transportation and travel composing 32% of their total expenditures and 26% of expenditures in the home region. It is estimated that resident mountain goat hunters made 1% of the total expenditures of all resident hunters in British Columbia during 1981.

TABLE 8.3
ESTIMATED RESIDENT MOUNTAIN GOAT HUNTER EXPENDITURES, 1981
(1981 Dollars)

Expenditure Category	Total Expenditures in British Columbia ($)	(%)	Expenditures in Home Region ($)
Basic and Species Licenses	68,700	(5.1)	53,000
Transportation and Travel	439,700	(32.2)	212,400
Food and Lodging	189,700	(13.9)	79,500
Taxidermy and Butchering	188,600	(13.8)	137,900
Guns, Ammunition and Hunting Equipment	372,200	(27.3)	267,400
Other Expenses	105,700	(7.7)	70,000
Totals	1,364,600	(100)	820,200

Resident hunter expenditures can also be described by the average amounts spent per year and per day. Table 8.4 gives estimates of average annual expenditures made by resident mountain goat hunters in British Columbia and in the home region during 1981. For comparison, the average annual expenditures by all resident hunters in British Columbia and in their home regions are shown in the third and fourth columns of Table 8.4.

As discussed in the introduction, average daily expenditures provides a more standardized basis for comparison among hunters than does annual expenditures. Table 8.5 presents estimates of the average expenditures per day, in British Columbia and in the home region, by resident mountain goat hunters during 1981. Again, for purposes of comparison, the third and fourth columns of the table present the average daily expenditures by all resident hunters.

Mountain goat hunters spent by far the greatest amount per day of any of the species hunters. Most of the reason for this, is because mountain goat hunters spent fewer days per year hunting than did other species hunters. Mountain goat hunters spent an average of only six days per year hunting mountain goat (Table 8.1) whereas the average number of days spent hunting other species varied between 8.1 and 10.4 and the average for all species was 9.7 days. Of course, this has the effect that when you take an expenditure, such as a license fee, and average it over fewer days the result is a higher daily expenditure.

TABLE 8.4

ESTIMATED AVERAGE ANNUAL EXPENDITURES BY RESIDENT MOUNTAIN GOAT HUNTERS, 1981

(1981 Dollars)

EXPENDITURE CATEGORY	MOUNTAIN GOAT HUNTERS		ALL RESIDENT HUNTERS	
	Expenditures in British Columbia ($)	Expenditures in Home Region ($)	Expenditures in British Columbia ($)	Expenditures in Home Region ($)
Basic and Species Licenses	49	38	32	24
Transportation and Travel	314	152	193	107
Food and Lodging	136	57	82	38
Taxidermy and Butchering	135	99	55	40
Guns, Ammunition and Equipment	266	191	146	111
Other Expenses	76	50	49	34
TOTALS	976	587	557	354

TABLE 8.5
ESTIMATED AVERAGE DAILY EXPENDITURES BY RESIDENT
MOUNTAIN GOAT HUNTERS, 1981
(1981 Dollars)

EXPENDITURE CATEGORY	MOUNTAIN GOAT HUNTERS		ALL RESIDENT HUNTERS	
	Expenditures in British Columbia ($)	Expenditures in Home Region ($)	Expenditures in British Columbia ($)	Expenditures in Home Region ($)
Basic and Species Licenses	8	6	3	3
Transportation and Travel	52	25	20	11
Food and Lodging	23	10	9	4
Taxidermy and Butchering	23	17	6	4
Guns, Ammunition and Equipment	44	32	15	11
Other Expenses	13	8	5	4
TOTALS	163	98	58	37

8.4 Estimated Economic Value of Resident Mountain Goat Hunting

The economic values reported in this section are based on estimated equations that predict the value resident hunters place on a day spent hunting mountain goat. An attempt was made in estimating these equations to take account of as many factors as possible that affect the value a hunter places on a day spent hunting. Since the quality of hunting varies to some extent by location, the value of a day spent hunting was estimated, where possible, according to the region hunted. The reported values refer to the amounts that resident hunters would, on

average, be willing to pay for a day spent hunting mountain goat over and above their actual expenditures reported in section 8.3. These values can be interpreted as the net recreational gain to resident hunters of a day spent hunting mountain goat and as such are the appropriate measures to use in valuing mountain goat hunter day losses for mitigation-compensation claims or benefit-cost analyses.

The average value all resident mountain goat hunters placed on a day spent hunting mountain goat was estimated to be $33.40. The distribution of daily values for hunting mountain goat by the region of hunt is presented in the first column of Table 8.6. The second column of the table presents estimates of the average annual value or the so-called "consumer surplus" that resident mountain goat hunters derived from their mountain goat hunting experience during 1981. The final column of the table reports estimates of the total economic value of resident mountain goat hunting according to the region hunted and for the Province as a whole. These values are the products of the estimated number of hunter days from Table 8.1 and the appropriate per day values.

TABLE 8.6
ESTIMATED VALUE OF RESIDENT MOUNTAIN GOAT HUNTING, 1981
(1981 Dollars)

Region Hunted	Daily Hunting Value ($)	Annual Hunting Value ($)	Total Hunting Value ($)	(%)
Vancouver Island	33.50	199	5,360	(1.9)
Lower Mainland	29.50	119	9,150	(3.2)
Thompson-Nicola	33.50	140	3,350	(1.2)
Kootenay	27.30	168	27,570	(9.8)
Cariboo	33.50	134	10,050	(3.6)
Skeena	34.70	209	130,130	(46.1)
Omineca-Peace	34.40	247	92,190	(32.7)
Okanagan	33.50	121	4,360	(1.5)
British Columbia	33.40	202	282,160	(100)

The daily values for mountain goat hunting in the Vancouver Island, Thompson-Nicola, Cariboo and Okanagan regions shown in the first column of Table 8.6 are the average value over these four regions. This was because there were insufficient observations to determine individual values for each of these regions. Resident hunters placed a relatively high value on a day spent hunting mountain goat with only mountain sheep, grizzly bear and cougar hunting being more highly valued.

Pearse-Bowden's results, inflated to 1981 dollars, gives a daily value for mountain goat hunting of $25.60. This suggests that the real value of a day spent hunting mountain goat has increased between 1970 and 1981. A similar result was found for other trophy species such as mountain sheep and grizzly whereas the value of a day spent hunting meat species such as moose and deer appears to have decreased over the same period.

The values presented in Table 8.6 are expressed in 1981 dollars. In some instances analysis may require expressing hunting values in more recent dollars. For example, we may want to evaluate the desirability of an enhancement project in terms of the hunter day values it is expected to produce. If the costs of the project are expressed in 1983 dollars then the benefits must be measured in the same year's dollars. This is because the real value of a dollar as a unit of measure changes from year to year with inflation. In order to facilitate such analysis, Table 8.7 presents the values of a day spent hunting mountain goat expressed in 1982, 1983 and 1984 dollars. The 1981 values were inflated to 1982 values using an index of 10.8%, from 1982 to 1983 dollar values using an index of 8.0% and from 1983 to 1984 dollar values using an index of 4.0%.

TABLE 8.7
ESTIMATED DAILY VALUE OF RESIDENT MOUNTAIN GOAT HUNTING
EXPRESSED IN 1982, 1983 AND 1984 DOLLARS

Region Hunted	Daily Hunting Value (1982 dollars)	Daily Hunting Value (1983 dollars)	Daily Hunting Value (1984 dollars)
Vancouver Island	37.10	40.10	41.70
Lower Mainland	32.70	35.30	36.70
Thompson-Nicola	37.10	40.10	41.70
Kootenay	30.30	32.70	34.00
Cariboo	37.10	40.10	41.70
Skeena	38.50	41.50	43.20
Omineca Peace	38.10	41.20	42.90
Okanagan	37.10	40.10	41.70
British Columbia	37.00	40.00	41.60

CHAPTER 9
RESIDENT MOUNTAIN SHEEP HUNTING

9.1 Estimated Resident Mountain Sheep Hunters and Hunter Days

Hunters resident in British Columbia purchased a total of 2,068 mountain sheep species licenses for the 1981-82 hunting season. Of the resident hunters responding to the survey questionnaire, 928 actively hunted mountain sheep during 1981. Hunters were also asked to indicate their preferences for hunting different species by ranking them from the most preferred to the least preferred. The results indicate that among all resident hunters mountain sheep was the fifth most preferred species out of thirteen choices composed of ten big game species plus waterfowl, upland game birds and small game. Resident hunters who actively hunted mountain sheep in 1981 indicated that mountain sheep was their most preferred species. The other species making up the five most preferred species for mountain sheep hunters were: elk (second), deer (third), moose (fourth) and mountain goat (fifth).

Based on species license sales and the survey results, it is estimated that a total of 1,586 resident hunters actively hunted mountain sheep during 1981. This represented 1% of all active resident hunters. The estimated distribution of active resident mountain sheep hunters among the eight Environmental Management Regions is reported in the first column of Table 9.1. Resident hunters are estimated to have spent a total of 14,680 days hunting mountain sheep in British Columbia during 1981. Resident mountain sheep hunting effort by region is reported in the second column of Table 9.1 while the third column summarizes the average number of days resident hunters spent hunting mountain sheep during 1981. Mountain sheep hunter days made up about 1% of the total resident species hunter days during 1981. The greatest percentage of resident mountain sheep hunting effort took place in the Omineca-Peace Region (33%) followed closely by the Kootenay Region (32%).

Resident hunters were asked if they hunted a particular species for a trophy, meat or both. From the responses to this question, it is estimated that 37% of resident mountain sheep hunters hunted mountain sheep for a trophy while 3% hunted for meat and 60% hunted for both reasons. By way of comparison, it is estimated that 7% of all resident hunting was for a trophy, 68% for meat and 25% for both. This suggests that resident mountain sheep hunters were more likely to hunt mountain sheep as a trophy species than the average for all species.

TABLE 9.1

ESTIMATED RESIDENT HUNTERS AND HUNTER DAYS (MOUNTAIN SHEEP), 1981

REGION HUNTED	NUMBER OF HUNTERS	NUMBER OF HUNTER DAYS (PERCENTAGE DISTRIBUTION)	AVERAGE HUNTER DAYS PER HUNTER
Vancouver Island	*	* (-)	*
Lower Mainland	*	* (-)	*
Thompson-Nicola	132	920 (6.2)	7.0
Kootenay	427	4,700 (32.0)	11.0
Cariboo	103	610 (4.2)	5.9
Skeena	330	2,960 (20.2)	9.0
Omineca-Peace	478	4,800 (32.7)	10.0
Okanagan	116	690 (4.7)	6.0
TOTALS	1,586	14,680 (100)	9.3

*No mountain sheep hunting in these regions.

9.2 Estimated Resident Hunter Mountain Sheep Harvest

It is estimated that 230 mountain sheep were harvested by resident hunters in British Columbia during 1981. The distribution of the mountain sheep harvest among the eight regions is presented in the first column of Table 9.2. The compulsory inspection reported a harvest of 263 mountain sheep by resident hunters in 1981. The Skeena Region harvest appears somewhat under-estimated while the other regions seem quite clost to the compulsory inspection results. The table also reports two measures of hunting success. The second column shows the percentage of active mountain sheep hunters that killed a mountain sheep during 1981 while the third column shows the average number of hunter days per harvest.

A majority (53%) of the provincial mountain sheep harvest took place in the Omineca-Peace Region. The next largest harvests took place in the Skeena and Kootenay regions. In addition, the most successful mountain sheep hunting took place in the Omineca-Peace Region. According to both measures, hunters were much more successful in the Omineca-Peace than any other region.

It is estimated that 66% of resident mountain sheep hunters were satisfied with the mountain sheep component of their 1981 hunting experience while 34% were not satisfied. This compares with 72% of resident mountain sheep hunters who were satisfied with their total hunting experience and 28% who were not satisfied. For all resident hunters, it is estimated that 64% were satisfied with their hunting experience during 1981 while 36% were not. Also, it is estimated that among residents who actively hunted mountain sheep in 1981, 74% planned to hunt mountain sheep again the following year.

TABLE 9.2

ESTIMATED RESIDENT HUNTERS HARVEST (MOUNTAIN SHEEP), 1981

REGION HUNTED	HARVEST (PERCENTAGE DISTRIBUTION)	% OF ACTIVE HUNTERS SUCCESSFUL	HUNTER DAYS PER HARVEST
Vancouver Island	* (-)	*	*
Lower Mainland	* (-)	*	*
Thompson-Nicola	14 (6.1)	10	65.7
Kootenay	31 (13.5)	7	151.6
Cariboo	9 (3.9)	8	67.8
Skeena	31 (13.5)	9	95.5
Omineca-Peace	123 (53.5)	26	39.0
Okanagan	22 (9.5)	19	53.1
TOTALS	230 (100)	14	63.8

*No mountain sheep hunting in these regions.

9.3 Expenditures by Resident Mountain Sheep Hunters, 1981

Table 9.3 reports estimates of the mountain sheep hunting-related expenditures made by resident mountain sheep hunters in British Columbia and in hunters' home region during 1981. Resident mountain sheep hunters, on average, made 62% of their provincial hunting expenditures in their region of residence. The greatest expenditures by resident mountain sheep hunters were made on transportation and travel composing 33% of their total expenditures and 26% of expenditures in the home region. It is estimated that resident mountain sheep hunters made 2% of the total expenditures of all resident hunters in British Columbia during 1981.

TABLE 9.3
ESTIMATED RESIDENT MOUNTAIN SHEEP HUNTER EXPENDITURES, 1981
(1981 Dollars)

Expenditure Category	Total Expenditures in British Columbia ($)	(%)	Expenditures in Home Region ($)
Basic and Species Licenses	86,000	(5.0)	65,400
Transportation and Travel	573,700	(33.1)	277,900
Food and Lodging	233,900	(13.5)	110,300
Taxidermy and Butchering	232,600	(13.4)	177,200
Guns, Ammunition and Hunting Equipment	434,500	(25.1)	329,100
Other Expenses	172,300	(9.9)	116,100
Totals	1,733,000	(100)	1,076,000

Resident hunter expenditures can also be described by the average amounts spent per year and per day. Table 9.4 gives estimates of average annual expenditures made by resident mountain sheep hunters in British Columbia and in the home region during 1981. For comparison,

the average annual expenditures by all resident hunters in British Columbia and in their home regions are shown in the third and fourth columns of Table 9.4.

As discussed in the introduction, average daily expenditures provides a more standardized basis for comparison among hunters than does annual expenditures. Table 9.5 presents estimates of the average expenditures per day in British Columbia and in the home region by resident mountain sheep hunters during 1981. Again, for purposes of comparison, the third and fourth columns of the table present the average daily expenditures by all resident hunters.

Resident mountain sheep hunters spent significantly more than the average over all resident hunters. One of the reasons for this is that the mountain sheep basic license is more expensive than most of the species basic licenses, notably moose and deer. A more important reason is that mountain sheep hunters probably have to travel further from their homes to hunt mountain sheep than would a typical moose or deer hunter. Finally, as discussed earlier, mountain sheep is more likely to be hunted for a trophy than most other species. This explains the significantly higher taxidermy costs.

TABLE 9.4
ESTIMATED AVERAGE ANNUAL EXPENDITURES BY RESIDENT
MOUNTAIN SHEEP HUNTERS, 1981
(1981 Dollars)

EXPENDITURE CATEGORY	MOUNTAIN SHEEP HUNTERS		ALL RESIDENT HUNTERS	
	Expenditures in British Columbia ($)	Expenditures in Home Region ($)	Expenditures in British Columbia ($)	Expenditures in Home Region ($)
Basic and Species Licenses	54	41	32	24
Transportation and Travel	362	175	193	107
Food and Lodging	148	70	82	38
Taxidermy and Butchering	147	112	55	40
Guns, Ammunition and Equipment	274	208	146	111
Other Expenses	109	73	49	34
TOTALS	1,094	679	557	354

TABLE 9.5
ESTIMATED AVERAGE DAILY EXPENDITURES BY RESIDENT
MOUNTAIN SHEEP HUNTERS, 1981
(1981 Dollars)

EXPENDITURE CATEGORY	MOUNTAIN SHEEP HUNTERS		ALL RESIDENT HUNTERS	
	Expenditures in British Columbia ($)	Expenditures in Home Region ($)	Expenditures in British Columbia ($)	Expenditures in Home Region ($)
Basic and Species Licenses	6	4	3	3
Transportation and Travel	39	19	20	11
Food and Lodging	16	8	9	4
Taxidermy and Butchering	16	12	6	4
Guns, Ammunition and Equipment	29	22	15	11
Other Expenses	12	8	5	4
TOTALS	117	73	58	37

9.4 Estimated Economic Value of Resident Mountain Sheep Hunting

The economic values reported in this section are based on estimated equations that predict the value resident hunters place on a day spent hunting mountain sheep. An attempt was made in estimating these equations to take account of as many factors as possible that affect the value a hunter places on a day spent hunting. Since the quality of hunting varies to some extent by location the value of a day spent hunting was estimated, where possible, according to the region hunted. The reported values refer to the amounts that resident hunters would, on

average, be willing to pay for a day spent hunting mountain sheep over and above their actual expenditures reported in section 9.3. These values can be interpreted as the net recreational gain to resident hunters of a day spent hunting mountain sheep and as such are the appropriate measures to use in valuing mountain sheep hunter day losses for mitigation-compensation claims or benefit-cost analyses.

The average value all resident mountain sheep hunters placed on a day spent hunting mountain sheep was estimated to be $46.40. The distribution of daily values for hunting mountain sheep by the region of hunt is presented in the first column of Table 9.6. The second column of the table presents estimates of the average annual value or the so-called "consumer surplus" that resident mountain sheep hunters derived from their mountain sheep hunting experience during 1981. The final column of the table reports estimates of the total economic value of resident mountain sheep hunting according to the region hunted and for the Province as a whole. These values are the products of the estimated number of hunter days from Table 9.1 and the appropriate per day values.

TABLE 9.6
ESTIMATED VALUE OF RESIDENT MOUNTAIN SHEEP HUNTING, 1981
(1981 Dollars)

Region Hunted	Daily Hunting Value ($)	Annual Hunting Value ($)	Total Hunting Value ($)	(%)
Vancouver Island	*	*	*	(-)
Lower Mainland	*	*	*	(-)
Thompson-Nicola	51.00	356	46,920	(6.9)
Kootenay	38.60	425	181,420	(26.6)
Cariboo	42.30	250	25,800	(3.8)
Skeena	41.40	371	122,540	(18.0)
Omineca-Peace	57.80	580	277,440	(40.7)
Okanagan	39.80	237	27,460	(4.0)
British Columbia	46.40	430	681,580	(100)

* No mountain sheep hunting in these regions.

Resident hunters placed a higher value on a day spent hunting mountain sheep than any other big game species. The average daily value found for mountain sheep hunting was $46.40 whereas the next most highly valued species, grizzly bear, had an average value of $42.60.

The high relative value for a day spent hunting mountain sheep seems to be borne out by Pearse-Bowden's results. Their survey would give an estimate of $50.00 for a day spent hunting mountain sheep expressed in 1981 dollars with the next most valuable species estimated to have a daily hunting value of $39.00.

A small number of hunters claimed to be willing to pay very large amounts for a day of mountain sheep hunting. An examination of the frequency distribution of daily values reveals that province-wide there were ten hunters who claimed to be willing to pay over $200 per day to hunt mountain sheep. Interestingly, nine of these hunters hunted in the Omineca-Peace Region. For no other species did any hunter indicate that he would be willing to pay more than $200 for a day spent hunting. Statistical tests applied to these observations indicated that they should be considered outliers. As a result, they were omitted from the calculations of the daily values.

The values presented in Table 9.6 are expressed in 1981 dollars. In some instances, analysis may require expressing hunting values in more recent dollar units. For example, we may want to evaluate the desirability of a prescribed burn in terms of the hunter day values it is expected to produce. If the costs of the burn are expressed in 1983 dollars then the benefits must be measured in the same year's dollars. This is because the real value of a dollar as a unit of measure changes from year to year with inflation. In order to facilitate such analysis, Table 9.7 presents the values of a day spent hunting mountain sheep expressed in 1982, 1983 and 1984 dollars. The 1981 values were inflated to 1982 values using an index of 10.8%, from 1982 to 1983 dollar values using an index of 8.0% and from 1983 to 1984 dollar values using an index of 4.0%.

TABLE 9.7

ESTIMATED DAILY VALUE OF RESIDENT MOUNTAIN SHEEP HUNTING
EXPRESSED IN 1982, 1983 AND 1984 DOLLARS

Region Hunted	Daily Hunting Value (1982 dollars)	Daily Hunting Value (1983 dollars)	Daily Hunting Value (1984 dollars)
Vancouver Island	*	*	*
Lower Mainland	*	*	*
Thompson-Nicola	56.50	61.00	63.40
Kootenay	42.80	46.20	48.00
Cariboo	46.90	50.60	52.60
Skeena	45.90	49.50	51.50
Omineca Peace	64.00	69.20	72.00
Okanagan	44.10	47.60	49.50
British Columbia	51.40	55.50	57.70

* No mountain sheep hunting in these regions.

CHAPTER 10
RESIDENT SMALL GAME, WATERFOWL AND UPLAND BIRD HUNTING

The calculations for non-big game hunting were done in a different manner from big game hunting. This was necessitated by the fact that the sample of resident hunters was drawn by species license with a check being made to ensure that no hunter was selected for more than one big game species. This procedure had the effect of squeezing out all but a small number of hunters who did not hold a species license. These were taken to be representative of resident hunters who hunted small game, waterfowl and upland birds but did not hunt big game. The sample results from this group were expanded to the population of active resident hunters who had not purchased any species licenses. The estimates for this group were combined with similar estimates of the small game, waterfowl and upland bird hunting activity of big game hunters to give the total estimates. Thus, it was necessary to estimate small game, waterfowl, and upland bird hunting activity in two steps rather than one as was done for big game hunting. The category "small game" in the questionnaire included small game other than waterfowl and upland birds and was defined as "...rabbits, squirrels, raccoons, foxes, beaver and other small fur-bearing mammals". It should be pointed out that the definition of small game is incorrect in that only trappers can legally hunt squirrels, beavers and other small fur-bearering mammals.

10.1 Estimated Resident Hunter Days

Table 10.1 presents estimates of the number of days residents spent hunting small game, waterfowl and upland game birds during 1981 according to the region of hunt. With the exception of the Lower Mainland Region, small game hunting seems quite evenly spread throughout the province. In the case of waterfowl hunting, it is estimated that 43% of the waterfowl hunting effort took place in the Lower Mainland Region followed in order of magnitude by the Okanagan (10.3%), Cariboo (10.2%) and Omineca-Peace (9.7%)

TABLE 10.1
ESTIMATED EFFORT BY SMALL GAME, WATERFOWL
AND UPLAND GAME BIRD HUNTERS 1981

REGION HUNTED	SMALL GAME HUNTER DAYS (% DISTRIBUTION)	WATERFOWL HUNTER DAYS (% DISTRIBUTION)	UPLAND BIRDS HUNTER DAYS (% DISTRIBUTION)
Vancouver Island	15,200 (8.7)	13,400 (6.0)	52,600 (10.5)
Lower Mainland	5,500 (3.2)	94,900 (42.2)	17,200 (3.4)
Thompson-Nicola	23,600 (13.6)	15,100 (6.8)	86,100 (17.2)
Kootenay	20,700 (11.9)	14,400 (6.5)	72,000 (14.3)
Cariboo	21,900 (12.6)	22,800 (10.2)	80,500 (16.0)
Skeena	28,100 (16.2)	17,300 (7.8)	62,200 (12.4)
Omineca-Peace	33,700 (19.4)	21,700 (9.7)	73,300 (14.6)
Okanagan	25,000 (14.4)	23,000 (10.3)	58,100 (11.6)
TOTALS	173,700 (100)	222,600 (100)	502,000 (100)

regions. As was found for small game hunting, upland game bird hunting is quite evenly spread among the regions with the exception of the Lower Mainland Region which appears to support a relatively limited amount of upland game bird hunting.

The following table shows the average number of days spent hunting small game, waterfowl and upland game birds by big game hunters and by hunters who did not hunt big game.

REPORTED HUNTER DAYS PER YEAR

	Small Game	Waterfowl	Upland Birds
Non-big game hunters	10.9	7.3	10.0
Big game hunters	13.2	9.8	10.0

Hunters, whether they hunted big game or not, reported the same average number of days spent hunting upland game birds. However, hunters who actively hunted big game species reported a greater number of days spent hunting small game and waterfowl than hunters who did not hunt big game.

10.2 Estimated Resident Hunter Harvest of Small Game, Waterfowl and Upland Birds

Table 10.2 presents the estimated harvest of small game, waterfowl and upland game birds by region of hunt. The table also shows the success rate measured as the harvest per hunter day.

A check on the accuracy of the waterfowl effort and harvest estimates are provided by the results of the National Harvest Survey and Species Composition Survey. These surveys of migratory game bird permit holders are undertaken by the Canadian Wildlife Service. Based on these surveys, it is estimated that 154,000 days were spent hunting ducks and geese in British Columbia and 208,106 waterfowl were harvested. A second source of information about the harvest of waterfowl is provided by the provincial Hunter Sample. According to the 1981 Hunter Sample results, resident hunters were

estimated to have harvested 163,000 waterfowl in 1981. The comparison to the C.W.S. and Hunter Sample results suggests that the above estimates of effort and harvest shown in Tables 10.1 and 10.2 are somewhat inflated. Much of the over-estimates of effort and harvest would appear to be for regions other than the Lower Mainland.

TABLE 10.2

ESTIMATED HARVEST BY RESIDENT SMALL GAME, WATERFOWL AND UPLAND GAME BIRD HUNTERS 1981

REGION HUNTED	SMALL GAME HARVEST (% DISTRIBUTION)	WATERFOWL HARVEST (% DISTRIBUTION)	UPLAND GAME BIRD HARVEST (% DISTRIBUTION)	SMALL GAME SUCCESS RATES	WATERFOWL SUCCESS RATES	UPLAND BIRD SUCCESS RATES
Vancouver Island	7,600 (7.7)	23,000 (9.3)	46,800 (11.1)	2.0	0.6	1.1
Lower Mainland	2,300 (2.4)	106,200 (43.2)	10,100 (2.4)	2.4	0.9	1.7
Thompson-Nicola	13,500 (13.9)	17,100 (6.9)	75,800 (18.0)	1.7	0.9	1.1
Kootenay	11,900 (12.3)	16,600 (6.7)	51,200 (12.2)	1.7	0.9	1.4
Cariboo	13,500 (13.9)	22,100 (9.0)	69,000 (16.4)	1.6	1.0	1.2
Skeena	11,700 (12.1)	14,400 (5.9)	61,500 (14.7)	2.4	1.2	1.0
Omineca-Peace	27,900 (28.8)	22,500 (9.2)	61,400 (14.6)	1.2	1.0	1.2
Okanagan	8,600 (8.9)	24,200 (9.8)	44,300 (10.6)	2.9	1.0	1.3
TOTALS	97,000 (100)	246,100 (100)	420,100 (100)	1.8	0.9	1.2

10.3 Estimated Expenditures by Resident Small Game, Waterfowl and Upland Bird Hunters

Table 10.3 reports the estimated expenditures by residents who hunted small game, waterfowl and upland game birds, but did not hunt big game species. This approach was taken because the total hunting expenditures by big game hunters have been attributed to the big game species. The expenditures by hunters of small game, waterfowl and upland birds can be added to big game hunters expenditures to give total spending by hunters.

TABLE 10.3
ESTIMATED EXPENDITURES BY RESIDENT SMALL GAME, WATERFOWL, AND UPLAND BIRD HUNTERS, 1981
(HUNTERS WHO DID NOT HUNT BIG GAME)
(1981 Dollars)

EXPENDITURE CATEGORY	SMALL GAME		UPLAND BIRDS		WATERFOWL	
	In B.C.	In home region	In B.C.	In home region	In B.C.	In home region
Basic and Species Licenses	11,300 (3.9)	11,300	52,700 (6.1)	49,500	33,900 (5.5)	33,900
Transportation and Travel	95,500 (32.6)	73,200	267,800 (31.2)	256,500	161,500	136,300
Food and Lodging	34,700 (11.9)	26,600	97,900 (11.4)	56,200	68,100 (11.0)	25,900
Taxidermy and Butchering	2,900 (1.0)	2,900	6,200 (0.7)	6,200	7,800 (1.3)	7,800
Guns, Ammunition and Equipment	142,200 (48.4)	130,100	380,600 (44.5)	374,400	296,000 (48.0)	253,400
Other Items	9,300 (3.2)	6,800	52,100 (6.1)	39,800	49,700 (8.0)	49,700
TOTAL	295,900 (100)	250,900	857,300 (100)	782,600	617,000 (100)	507,000

Table 10.4 presents average annual expenditures by small game, waterfowl and upland bird hunters. The major type of expenditure by non-big game hunters was for guns, ammunition and equipment. By way of comparison, the major expenditure by big game hunters was for travel and transportation. Also, non-big game hunters made a greater proportion of their total expenditures in their home region than did big game hunters. Small game, waterfowl and upland game bird hunting is less expensive than big game hunting. Big game hunters made average annual expenditures of $557 in 1981, of which $354 were spent in their home region. These differences in the size and pattern of expenditures between big game and non-big game hunters are largely explained by the fact that big game hunters have to travel further afield to hunt their preferred species.

TABLE 10.4

ESTIMATED ANNUAL EXPENDITURES BY RESIDENT SMALL GAME, WATERFOWL, AND UPLAND BIRD HUNTERS 1981

(HUNTERS WHO DID NOT HUNT BIG GAME)

(1981 Dollars)

EXPENDITURE CATEGORY	SMALL GAME		UPLAND BIRDS		WATERFOWL	
	In B.C.	In home region	In B.C.	In home region	In B.C.	In home region
Basic and Species Licenses	9	9	9	9	12	12
Transportation and Travel	73	57	47	45	57	48
Food and Lodging	27	21	17	10	24	9
Taxidermy and Butchering	2	2	1	1	3	3
Guns, Ammunition and Equipment	112	112	67	66	104	89
Other Items	7	5	9	7	18	18
TOTAL	230	196	150	138	218	179

Finally, Table 10.5 presents the average daily expenditures by resident small game, waterfowl and upland game bird hunters.

TABLE 10.5
ESTIMATED DAILY EXPENDITURES BY RESIDENT SMALL GAME,
WATERFOWL, AND UPLAND BIRD HUNTERS 1981
(HUNTERS WHO DID NOT HUNT BIG GAME)
(1981 Dollars)

EXPENDITURE CATEGORY	SMALL GAME		UPLAND BIRDS		WATERFOWL	
	In B.C.	In home region	In B.C.	In home region	In B.C.	In home region
Basic and Species Licenses	1	1	1	1	2	2
Transportation and Travel	7	5	5	5	8	7
Food and Lodging	3	2	2	1	3	1
Taxidermy and Butchering	-	-	-	-	-	-
Guns, Ammunition and Equipment	10	9	7	7	14	12
Other Items	1	1	1	1	2	2
TOTAL	22	18	16	15	29	24

10.4 Estimated Economic Values of Resident Small Game, Waterfowl and Upland Bird Hunting

Table 10.6 presents the estimated economic values that resident hunters placed on a day spent hunting small game, waterfowl and upland game birds. These values represent the values placed on the species by all hunters: both big game and non-big game hunters. The table also shows the daily values expressed in 1982, 1983 and 1984 dollars. The 1981 values were inflated to 1982 values using an index of 10.8%, from 1982 to 1983 dollar values using an index of 8.0% and from 1983 to 1984 dollar values using an index of 4.0%.

Resident hunters placed a higher value on a day spent hunting waterfowl than either upland game birds or small game. The reason for this would seem to be that a high proportion of small game and upland game bird hunting is incidental to big game hunting which is unlikely to be the case for waterfowl hunting. The daily economic values found for small game, waterfowl and upland game birds were lower than the comparable values found for all big game species. The lowest value that resident hunters placed on a day spent hunting any of the big game species was $17.90 for black bear.

TABLE 10.6
ESTIMATED DAILY ECONOMIC VALUE IN 1981,
1982, 1983 and 1984 DOLLARS

	SMALL GAME HUNTER DAY	UPLAND BIRD HUNTER DAY	WATERFOWL HUNTER DAY
1981 Dollar Values	$11.70	$13.10	$15.60
1982 Dollar Values	13.00	14.50	17.30
1983 Dollar Values	14.00	15.70	18.70
1984 Dollar Values	14.60	16.30	19.50

Table 10.7 presents estimates of the total economic value that residents placed on their small game, waterfowl and upland game bird hunting in 1981 according to the region hunted. The estimates represent the economic value derived from all small game, waterfowl and upland game bird hunting.

TABLE 10.7
ESTIMATED ECONOMIC VALUE OF SMALL GAME, WATERFOWL
AND UPLAND GAME BIRD HUNTING 1981
(1981 DOLLARS)

REGION HUNTED	SMALL GAME	WATERFOWL	UPLAND GAME BIRDS
Vancouver Island	177,840 (8.8)	209,040 (6.0)	689,060 (10.5)
Lower Mainland	64,350 (3.2)	1,480,440 (42.6)	225,320 (3.4)
Thompson-Nicola	276,120 (13.6)	235,560 (6.8)	1,127,910 (17.2)
Kootenay	242,190 (11.9)	224,640 (6.5)	943,200 (14.3)
Cariboo	256,230 (12.6)	355,680 (10.2)	1,054,550 (16.0)
Skeena	328,770 (16.2)	269,880 (7.8)	814,820 (12.4)
Omineca-Peace	394,290 (19.4)	338,520 (9.8)	960,230 (14.6)
Okanagan	292,500 (14.3)	358,800 (10.3)	761,110 (11.6)
TOTALS	2,032,290 (100)	3,472,560 (100)	6,576,200 (100)

10.5 Comparison to the Results of the C.W.S Survey of Migratory Game Bird Hunters

The Canadian Wildlife Service surveyed a sample of migratory game bird permit holders in early 1976 about their hunting activity during 1975. The purpose of the survey was to obtain information on the magnitude and value of migratory game bird hunting. This survey is of interest because the questions about hunters' expenditures and economic values are very similar to those asked in the provincial survey. The results of the survey are presented in the report "Human Dimensions of Migratory Game-Bird Hunting in Canada".*

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* Fern Filion and Shane Parker, Occasional Paper Number 51, Canadian Wildlife Service, Ottawa, 1984.

The C.W.S. survey found that in 1975 migratory game bird hunters in British Columbia incurred mean daily expenditures of about $24 (1981 dollars). This compares to mean daily expenditures estimated from the provincial survey of $29 for 1981. The slightly higner expenditures found in the provincial survey may be due to real price increases in some components of hunter expenditures, such as transportation, over the period 1975 to 1981. Also, the C.W.S. survey estimated that migratory game bird hunters spent more days per year hunting, on average, than did the provincial survey. This may partially explain the difference in mean daily expenditures since as the fixed costs of hunting are spread over more days, the average daily cost is reduced.

In order to determine the economic value of migratory game bird hunting, the C.W.S. survey asked hunters how much their annual expenditures would have to increase before they stopped hunting. The provincial survey differed in that it asked hunters at what additional daily expenditure they would stop hunting. Expressed on a daily basis, the C.W.S. survey found that the mean value migratory game bird hunters would have been willing to pay over and above their actual expenditures was $12.50 (1981 dollars). The provincial survey found that hunters were willing to pay an additional $15.60 for a day spent hunting migratory game birds in 1981. Again, the difference in values may be due to the difference in the average number of days spent hunting estimated from the two surveys and difference in question wording. It is probable that the value a hunter places on the marginal day spent hunting diminishes as the number of days spent hunting increases thereby reducing the average.

While the daily expenditures and economic values found in the provincial survey are somewhat greater than those found in the C.W.S. survey, the ratios of willingness to increase expenditures to actual expenditures are quite consistent between the surveys. The C.W.S. survey found that hunters would be willing to increase their expenditures by 52.5% over their actual expenditures before they would stop hunting, while the provincial survey estimated the percentage increase was 53.8%.

CHAPTER 11

PROVINCIAL SUMMARY TABLES

TABLE 11.1

PROVINCIAL SUMMARY OF ESTIMATED NUMBER OF RESIDENT HUNTERS
BY SPECIES AND REGION HUNTED, 1981

Region Hunted	Black Bear	Caribou	Cougar	Deer	Elk	Grizzly Bear	Moose	Mountain Goat	Mountain Sheep
Vancouver Island	1,378	*	85	13,190	338	15	*	27	*
Lower Mainland	806	*	38	4,245	*	11	*	77	*
Thompson-Nicola	1,731	13	72	14,161	462	38	7,812	24	132
Kootenay	2,258	7	133	13,512	8,975	348	6,188	164	427
Cariboo	1,582	79	32	12,277	*	84	11,430	75	103
Skeena	1,598	406	*	3,417	70	400	8,147	623	330
Omineca Peace	2,147	363	*	6,317	1,364	487	13,588	374	478
Okanagan	1,338	*	54	9,013	695	33	1,872	36	116
Provincial Totals	12,838	868	414	76,132	11,995	1,416	49,037	1,400	1,586

* Denotes no hunting for the particular species in the region indicated.

TABLE 11.2

PROVINCIAL SUMMARY OF ESTIMATED NUMBER OF RESIDENT HUNTER DAYS

BY SPECIES AND REGION HUNTED, 1981

Region Hunted	Black Bear	Caribou	Cougar	Deer	Elk	Grizzly Bear	Moose	Mountain Goat	Mountain Sheep	Small Game	Upland Birds	Waterfowl
Vancouver Island	11,100	*	850	169,700	2,800	80	*	160	*	15,200	52,600	13,400
	(10.4)		(20.7)	(22.6)	(2.3)	(0.6)		(1.9)		(8.7)	(10.5)	(6.0)
Lower Mainland	4,200	*	590	28,700	*	70	*	310	*	5,500	17,200	94,900
	(3.9)		(14.4)	(3.8)		(0.5)		(3.7)		(3.2)	(3.4)	(42.2)
Thompson-Nicola	13,400	50	410	120,100	2,700	260	61,700	100	920	23,600	86,100	15,100
	(12.5)	(0.7)	(10.0)	(16.0)	(2.2)	(2.0)	(13.3)	(1.2)	(6.2)	(13.6)	(17.2)	(6.8)
Kootenay	21,500	150	1,640	158,300	101,700	3,280	57,600	1,010	4,700	20,700	72,000	14,400
	(20.1)	(2.1)	(39.9)	(21.1)	(81.7)	(25.0)	(12.5)	(12.0)	(32.0)	(11.9)	(14.3)	(6.5)
Cariboo	13,500	440	190	108,000	*	620	105,000	300	610	21,900	80,500	22,800
	(12.6)	(6.3)	(4.6)	(14.4)		(4.7)	(22.7)	(3.6)	(4.2)	(12.6)	(16.0)	(10.2)
Skeena	14,400	3,360	*	29,800	500	3,810	86,600	3,750	2,960	28,100	62,200	17,300
	(13.5)	(47.9)		(4.0)	(0.4)	(29.1)	(18.7)	(44.4)	(20.2)	(16.2)	(12.4)	(7.8)
Omineca Peace	18,300	3,020	*	49,800	11,300	4,810	138,200	2,680	4,800	33,700	73,300	21,700
	(17.1)	(43.0)		(6.6)	(9.1)	(36.6)	(29.9)	(31.7)	(32.7)	(19.4)	(14.6)	(9.7)
Okanagan	10.500	*	430	86,700	5,400	200	13,400	130	690	25,000	58,100	23,000
	(9.9)		(10.4)	(11.5)	(4.3)	(1.5)	(2.9)	(1.5)	(4.7)	(14.4)	(11.6)	(10.3)
Provincial Totals	106,900	7,020	4,110	751,100	124,400	13,130	462,500	8,440	14,680	173,700	502,000	222,600
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)

* Denotes no hunting for the particular species in the region indicated.

TABLE 11.3
PROVINCIAL SUMMARY OF ESTIMATED RESIDENT HUNTER HARVEST
BY SPECIES AND REGION HUNTED, 1981

Region Hunted	Black Bear	Caribou	Cougar	Deer	Elk	Grizzly Bear	Moose	Mountain Goat	Mountain Sheep	Small Game	Upland Birds	Waterfowl
Vancouver Island	457	*	36	13,063	202	2	*	9	*	7,600	46,800	23,000
	(10.7)		(29.0)	(33.5)	(9.4)	(1.2)		(2.0)		(7.7)	(11.1)	(9.3)
Lower Mainland	194	*	13	1,645	*	2	*	24	*	2,300	10,100	106,200
	(4.6)		(10.5)	(4.2)		(1.2)		(5.4)		(2.4)	(2.4)	(43.2)
Thompson-Nicola	573	2	11	6,238	33	2	1,208	2	14	13,500	75,800	17,100
	(13.5)	(1.3)	(8.9)	(16.0)	(1.6)	(1.2)	(9.3)	(0.5)	(6.1)	(13.9)	(18.0)	(6.9)
Kootenay	820	0	36	6,980	1,688	40	854	87	31	11,900	51,200	16,600
	(19.2)	(-)	(29.0)	(17.9)	(78.9)	(23.5)	(6.5)	(19.6)	(13.5)	(12.3)	(12.2)	(6.7)
Cariboo	443	9	11	3,130	*	9	2,799	17	9	13,500	69,000	22,100
	(10.4)	(5.8)	(8.9)	(8.0)		(5.3)	(21.4)	(3.8)	(3.9)	(13.9)	(16.4)	(9.0)
Skeena	546	88	*	2,289	0	55	2,596	207	31	11,700	61,500	14,400
	(12.8)	(57.1)		(5.9)	(0)	(32.3)	(19.8)	(46.6)	(13.5)	(12.1)	(14.7)	(5.9)
Omineca Peace	875	55	*	1,345	198	51	5,423	79	123	27,900	61,400	22,500
	(20.5)	(36.8)		(3.5)	(9.3)	(30.0)	(41.4)	(17.8)	(53.5)	(28.8)	(14.6)	(9.2)
Okanagan	352	*	17	4,320	18	9	208	19	22	8,600	44,300	24,200
	(8.3)		(13.7)	(11.0)	(0.8)	(5.3)	(1.6)	(4.3)	(9.5)	(8.9)	(10.6)	(9.8)
Provincial Totals	4,260	154	124	39,010	2,139	170	13,088	444	230	97,000	420,100	246,100
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)

* Denotes no hunting for the particular species in the region indicated.

TABLE 11.4

PROVINCIAL SUMMARY OF ESTIMATED RESIDENT HUNTERS

EXPENDITURES IN BRITISH COLUMBIA, 1981

Expenditure Category	Black Bear	Caribou	Cougar	Deer	Elk	Grizzly Bear	Moose	Mountain Goat	Mountain Sheep	Small Game	Upland Birds	Water-fowl	Totals
Basic & Species Licences	414,100 (5.0)	45,100 (4.8)	17,700 (3.8)	2,219,700 (5.7)	453,600 (5.9)	93,600 (5.7)	1,538,700 (5.9)	68,700 (5.1)	86,000 (5.0)	11,300 (3.9)	52,700 (6.1)	33,900 (5.5)	5,035,100
Transportation & Travel	2,644,500 (32.0)	327,200 (34.5)	154,100 (33.6)	13,612,200 (35.1)	2,676,600 (34.7)	502,700 (30.6)	9,154,200 (35.4)	439,700 (32.2)	573,700 (33.1)	95,500 (32.6)	267,800 (31.2)	161,500 (26.2)	30,609,700
Food & Lodging	1,111,300 (13.5)	139,600 (14.7)	55,800 (12.1)	5,734,800 (14.8)	1,153,400 (14.9)	216,700 (13.2)	3,917,100 (15.2)	189,700 (13.9)	233,900 (13.5)	34,700 (11.9)	97,900 (11.4)	68,100 (11.0)	12,953,000
Taxidermy & Butchering	951,500 (11.5)	104,800 (11.1)	79,700 (17.3)	3,632,600 (9.4)	804,200 (10.4)	251,900 (15.4)	2,339,900 (9.1)	188,600 (13.8)	232,600 (13.4)	2,900 (1.0)	6,200 (0.7)	7,800 (1.3)	8,602,700
Guns, Ammunition & Hunting Equipment	2,356,400 (28.6)	238,000 (25.1)	113,100 (24.6)	10,251,900 (26.4)	1,921,500 (24.9)	430,700 (26.3)	6,681,600 (25.9)	372,200 (27.3)	434,500 (25.1)	142,200 (48.4)	380,600 (44.5)	296,000 (48.0)	23,618,700
Other Expenses	774,100 (9.4)	93,300 (9.8)	39,400 (8.6)	3,311,400 (8.6)	712,000 (9.2)	145,200 (8.8)	2,213,800 (8.5)	105,700 (7.7)	172,300 (9.9)	9,300 (3.2)	52,100 (6.1)	49,700 (8.0)	7,678,300
Totals	8,251,900 (100)	948,000 (100)	459,800 (100)	38,762,600 (100)	7,721,300 (100)	1,640,800 (100)	25,845,300 (100)	1,364,600 (100)	1,733,000 (100)	295,900 (100)	857,300 (100)	617,000 (100)	88,497,500

TABLE 11.5
PROVINCIAL SUMMARY OF AVERAGE DAILY EXPENDITURES
BY RESIDENT HUNTERS, 1981

Expenditure Category	Black Bear	Caribou	Cougar	Deer	Elk	Grizzly Bear	Moose	Mountain Goat	Mountain Sheep	Small Game	Upland Birds	Water-fowl
Basic & Species Licences	4	6	4	3	4	7	3	8	6	1	1	2
Transportation & Travel	25	47	38	18	21	38	20	52	39	7	5	8
Food & Lodging	11	20	14	8	9	17	9	23	16	3	2	3
Taxidermy & Butchering	9	15	20	5	6	19	5	23	16	-	-	-
Guns, Ammunition & Hunting Equipment	22	34	28	14	15	33	15	44	29	10	7	14
Other Expenses	7	13	10	4	6	11	5	13	12	1	1	2
Totals	78	135	114	52	61	125	57	163	117	22	16	29

TABLE 11.6

PROVINCIAL SUMMARY OF ESTIMATED TOTAL

NET ECONOMIC VALUE OF RESIDENT HUNTING, 1981

Region Hunted	Black Bear	Caribou	Cougar	Deer	Elk	Grizzly Bear	Moose	Mountain Goat	Mountain Sheep	Small Game	Upland	Waterfowl
Vancouver Island	208,680	*	29,070	4,100,640	103,320	3,590	*	5,360	*	177,840	689,060	209,040
	(10.9)		(20.7)	(23.0)	(2.7)	(0.6)		(1.9)		(8.8)	(10.5)	(6.0)
Lower Mainland	96,180	*	20,180	721,650	*	3,140	*	9,150	*	64,350	225,320	1,480,440
	(5.0)		(14.4)	(4.1)		(0.6)		(3.2)		(3.2)	(3.4)	(42.6)
Thompson-Nicola	272,020	1,060	14,020	2,768,480	60,480	11,670	1,616,540	3,350	46,920	276,120	1,127,910	235,560
	(14.2)	(0.5)	(10.0)	(15.5)	(1.6)	(2.1)	(11.7)	(1.2)	(6.9)	(13.6)	(17.2)	(6.8)
Kootenay	339,700	3,180	56,090	3,873,210	3,112,020	109,880	1,509,120	27,570	181,420	242,190	943,200	224,640
	(17.8)	(1.6)	(39.9)	(21.8)	(82.0)	(19.7)	(10.9)	(9.8)	(26.6)	(11.9)	(14.3)	(6.5)
Cariboo	222,750	9,330	6,500	2,387,630	*	27,840	3,160,500	10,050	25,800	256,230	1,054,550	355,680
	(11.7)	(4.8)	(4.6)	(13.4)		(5.0)	(22.8)	(3.6)	(3.8)	(12.6)	(16.0)	(10.2)
Skeena	262,080	91,730	*	749,140	14,350	172,790	2,762,540	130,130	122,540	328,770	814,820	269,880
	(13.7)	(47.2)		(4.2)	(0.4)	(30.9)	(19.9)	(46.1)	(18.0)	(16.2)	(12.4)	(7.8)
Omineca-Peace	320,250	89,390	*	1,267,570	362,370	220,780	4,477,680	92,190	277,440	394,290	960,230	338,520
	(16.8)	(45.9)		(7.1)	(9.6)	(39.5)	(32.3)	(32.7)	(40.7)	(19.4)	(14.6)	(9.8)
Okanagan	189,000	*	14,710	1,938,160	139,860	8,980	333,660	4,360	27,460	292,500	761,110	358,800
	(9.9)		(10.4)	(10.9)	(3.7)	(1.6)	(2.4)	(1.5)	(4.0)	(14.3)	(11.6)	(10.3)
Totals	1,910,660	194,690	140,570	17,806,480	3,792,760	558,850	13,860,040	282,160	681,580	2,032,290	6,576,200	3,472,560
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)

* Denotes no hunting for the particular species in the region indicated.

TABLE 11.7

PROVINCIAL SUMMARY OF AVERAGE DAILY NET ECONOMIC VALUE OF RESIDENT HUNTING, 1981

Region Hunted	Black Bear	Caribou	Cougar	Deer	Elk	Grizzly Bear	Moose	Mountain Goat	Mountain Sheep	Small Game	Upland	Waterfowl
Vancouver Island	18.80	*	34.20	24.10	36.90	44.90	*	33.50	*	11.70	13.10	15.60
Lower Mainland	22.90	*	34.20	25.00	*	44.90	*	29.50	*	11.70	13.10	15.60
Thompson-Nicola	20.30	21.20	34.20	23.00	24.00	44.90	26.20	33.50	51.00	11.70	13.10	15.60
Kootenay	15.80	21.20	34.20	24.50	30.60	33.50	26.20	27.30	38.60	11.70	13.10	15.60
Cariboo	16.50	21.20	34.20	22.10	*	44.90	30.10	33.50	42.30	11.70	13.10	15.60
Skeena	18.20	27.30	*	25.20	28.70	45.40	31.90	34.70	41.40	11.70	13.10	15.60
Omineca-Peace	17.50	29.60	*	25.40	32.10	45.90	32.40	34.40	57.80	11.70	13.10	15.60
Okanagan	18.00	*	34.20	22.40	25.90	44.90	24.90	33.50	39.80	11.70	13.10	15.60
Totals	17.90	27.70	34.20	23.70	30.50	42.60	30.00	33.40	46.40	11.70	13.10	15.60

* Denotes no hunting for the particular species in the region indicated.

APPENDIX A
CHARACTERISTICS OF RESIDENT HUNTERS

The resident hunter questionnaire asked respondents to indicate the class that best represented their age, education and income. The following presents the percentage distributions of these characteristics as well as the cumulative percentage distributions. The latter distributions show the percentage of hunters falling into the indicated class and all preceding classes.

(a) Age

Table A.1 reports the percentage and cumulative percentage distributions of resident hunters by age class. For purposes of comparison, the first column of the table shows the percentage distributions of the male population of the province sixteen years of age and over. This distribution was selected for comparison since it appears there were very few licensed hunters under sixteen.

TABLE A.1
AGE DISTRIBUTION OF RESIDENT HUNTERS, 1981

Age Class	Percentage Distribution of Male Population B.C.	Percentage Distribution of Resident Hunters	Cumulative Percentage Distribution
Under 16 years	-	1.6%	1.6%
16-25 years	23.8%	16.9	18.5
26-35 years	23.1	33.8	52.3
36-45 years	16.3	24.2	76.5
46-55 years	13.7	14.9	91.4
56-65 years	11.4	6.9	98.3
Over 65 years	11.7	1.7	100.0

It appears that hunters are more likely to be in their mid-years, between 26 and 55, than is the case for the provincial male population. Hunters are less likely to be found in the youngest and oldest age categories. The average age of resident hunters, evaluated at the class mid-points, was 35.9 years. This is somewhat younger than the adult male population of the province which has an average age of 41.3 years. Resident hunters were also younger, on average, than licensed resident anglers who had an average age of 40.7 years.

(b) Education

Resident hunters were asked to indicate the number of years of formal schooling they had completed. Table A.2 shows the distributions of the years of formal schooling completed by resident hunters. Resident hunters were quite heavily bunched in the 10-12 years category and completed an average of 11.7 years of schooling. Unfortunately, the Census does not provide the educational attainment of the provincial population on an equivalent classification. Nevertheless, an attempt was made to aggregate the Census categories to correspond to those used in the survey. The resulting distribution of the educational attainment of the male population of the Province is shown in the final column.

TABLE A.2

EDUCATIONAL DISTRIBUTION OF RESIDENT HUNTERS, 1981

YEARS OF EDUCATION COMPLETED	PERCENTAGE DISTRIBUTION OF HUNTERS	CUMULATIVE PERCENTAGE DISTRIBUTION	PERCENTAGE DISTRIBUTION OF MALE POPULATION
Up to 9 years	17.0%	17.0%	13.2%
10-12 years	57.4	74.4	66.2
13-16 years	18.8	93.2	15.4
Over 16 years	6.8	100.0	5.2

(c) Income

Table A.3 shows the distributions of resident hunters before tax income. Resident hunters were heavily concentrated in the middle income classes between $10,000 and $40,000 and had an average income of about $24,700 in 1981. By way of comparison, resident anglers were found to have an average income of about $21,200 which is somewhat lower than that found for hunters. Unfortunately, the Census provides no equivalent income statistics for the provincial population. The most comparable measures of income given in the Census are for household income. The distribution of household income for British Columbia is shown in the final column. The average household income for the Province was $26,300.

TABLE A.3
INCOME DISTRIBUTION OF RESIDENT HUNTERS
(1981 Canadian Dollars)

INCOME CLASS	PERCENTAGE DISTRIBUTION OF HUNTERS INCOME	CUMULATIVE PERCENTAGE DISTRIBUTION	PERCENTAGE DISTRIBUTION OF HOUSEHOLD INCOME
Under $10,000	13.0%	13.0%	19.4%
10,000-19,999	21.1	34.1	22.7
20,000-29,999	38.2	72.3	23.4
30,000-39,999	19.4	91.7	16.7
40,000-49,999	4.8	96.5	17.8
Over 50,000	3.5	100.0	

APPENDIX B
ADDITIONAL COMMENTS BY RESIDENT HUNTERS

Resident hunters were asked to make any additional comments they might have on a separate sheet of paper and enclose it with the questionnaire. A large number of hunters used the opportunity to express their feelings and concerns about the state of hunting in British Columbia. While any attempt to interpret and classify these comments must be arbitary to some extent, they were grouped according to some very broad categories. In some instances, these categories are not distinct but related to one another. This appendix tries to summarize the types of comments made by hunters, ordered according to how frequently a subject was mentioned.

The two most frequent comments were about the license fee increase and the understaffing and underfinancing of the Conservation Officer service. Many resident hunters felt the size of the license fee increase was unreasonable especially in comparison to the percentage increase of non-resident fees. The timing of the fee increase was particularly unfortunate given the state of the economy and campaign for fiscal restraint. The fear was expressed that such large fee increases combined with widespread unemployment would provide a greater incentive for poaching. Some hunters expressed the opinion that there should be smaller percentage fee increases introduced at more frequent intervals. Also, many hunters stated that they would like some assurance that fees were directed towards the management of the resource rather than into general revenues. A very small number of hunters were in favour of the fee increase expecting it to discourage the inexperienced and casual hunter.

Resident hunters commented frequently on never having encountered a conservation officer in the field. It was felt quite strongly by some hunters that the level of staffing and financing of the Conservation Officer service should be increased to combat poaching and other infractions of the hunting regulations. The question of having auxiliary staff or volunteers

in the field during hunting season was raised. In addition, a few hunters were in favour of reopening the road checks such as Cache Creek.

The next most commonly expressed comments were on the following subjects: limited entry hunts, declining game populations, non-resident hunters and poaching. A number of hunters complained that the limited entry hunting system was inconvenient because it was difficult to plan hunting trips with friends. Some hunters felt that guide quotas were much too generous compared to the number of animals allocated to residents through limited entry. Further, some hunters felt that only residents from the particular area should be allowed to apply since it was unfair for hunters from outside the area to be able to hunt when some local residents might not have been drawn. Hunters also complained about some cases in which individuals had been drawn in consecutive years. It was suggested that successful applicants be ineligible for the draw in following year(s).

A number of hunters commented on what appeared to be declining game populations. A few hunters suggested that there be a complete prohibition on hunting some species for anywhere from one to five years in order to allow the populations to rebuild. There were also a number of more selective suggestions about alternating openings and closures and restrictions on females. In addition, suggestions were made about closures for grizzly bear and Dall and Rocky Mountain bighorn sheep and the opinion was expressed that a hunter be allowed only one of each of these species in his lifetime.

Resident hunters appeared to feel that too many animals had been allocated to guide quotas and that as a consequence there were too many non-resident hunters. The view was expressed that the number of non-residents hunters should be restricted and their license fees increased. Also, some resident hunters were annoyed that many non-residents (and residents) were only concerned with a trophy and left the meat behind in the bush.

There was fairly widespread concern about the amount of poaching that seemed to be taking place. A number of hunters commented that this should

be dealt with by increasing the number of conservation officers in the field and encouraging hunters to report incidents. It was felt that the existing fines and suspensions for poaching were somewhat archaic and should be increased.

A number of resident hunters made comments about the hunting regulations and their administration. A few hunters felt it would be easier to plan hunting trips if the synopsis were available earlier. There were also general complaints about the regulations being too complex and requiring an excessive amount of paper work. Specific complaints were made about the restrictions or the number of bull points and the timing of season openings and closings. A number of hunters felt seasons were opening too early for some species and when a kill was made meat was spoiling in the field.

Resident hunters made comments about the large wolf populations and their effects on game populations. The region most frequently mentioned was Vancouver Island although reference was also made to the Cariboo and Peace regions. A number of solutions were suggested by hunters. These included poisoning, bounties, open seasons and hunting with snowmobiles and planes.

In addition, resident hunters made comments on a number of other subjects. A few hunters felt that natives were over harvesting in some cases and largely ignoring the regulations. Also, a small number of hunters complained about road hunting and felt that road closures should be imposed. There were also complaints about the effects of logging and mining on habitat and the scenery. Finally, there was a group of hunters who felt that the main benefit of hunting was the opportunity to enjoy some wilderness scenery with their buddies and who would not be very disappointed if they did not kill any animals.

APPENDIX C

BRITISH COLUMBIA RESIDENT HUNTER SURVEY FOR THE YEAR 1981

1. What was your age on your last birthday?

	CHECK ONE
UNDER 16 YEARS	___
16 - 25 YEARS	___
26 - 35 YEARS	___
36 - 45 YEARS	___
46 - 55 YEARS	___
56 - 65 YEARS	___
OVER 65 YEARS	___

2. Education.
Please indicate how many years of formal education you have completed.

UP TO 9 YEARS	___
10 - 12 YEARS	___
13 - 16 YEARS	___
OVER 16 YEARS	___

3. Your income.
Which of the following categories best describes your annual income, before taxes, in 1981?

UNDER $10,000	___
$10,000 - $19,000	___
$20,000 - $29,999	___
$30,000 - $39,000	___
$40,000 - $49,000	___
OVER $50,000	___

4. What is your sex?

MALE	___
FEMALE	___

5. In which resource management region did you live?
By reference to the map provided, please identify the Resource Management Region of British Columbia in which you permanently reside. Use the management region number shown on the map.

RESOURCE MANAGEMENT REGION NUMBER	⌊_⌋

6. Did you hunt in B.C. in 1981?

	CHECK ONE
YES	___
NO	___

Even if you did not hunt in 1981 your responses are still important to us. Please complete questions 1 through 6 and return this questionnaire in the envelope provided as early as possible.

7. Rank your hunting preferences.

In order of their importance to you, which species do you most prefer to hunt in B.C.? Please rank the following list by placing a 1 beside your most preferred species, a 2 beside your second preference, and so on. Then please put a check mark in the circle next to those for which you bought tags in 1981.

		PREFERENCE	CHECK WHICH TAGS YOU PURCHASED IN 1981
1.	BLACK BEAR	____	____
2.	GRIZZLY BEAR	____	____
3.	CARIBOU	____	____
4.	COUGAR	____	____
5.	DEER	____	____
6.	ELK	____	____
7.	MOOSE	____	____
8.	MOUNTAIN GOAT	____	____
9.	MOUNTAIN SHEEP	____	____
10.	WOLF	____	____
11.	SMALL GAME	____	N/A
12.	WATERFOWL	____	N/A
13.	UPLAND BIRDS	____	N/A

8. Where did you hunt? For how long?

Where did your 1981 hunt(s) take place and how many days did you spend hunting? For each species you hunted please indicate how many days you spent hunting in each of British Columbia's eight Resource Management Regions. (The numbers identifying the Resource Management Regions are shown on the map provided.)

NUMBER OF DAYS SPENT HUNTING IN EACH RESOURCE MANAGEMENT REGION BY SPECIES HUNTED

		Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8
1.	BLACK BEAR	____	____	____	____	____	____	____	____
2.	GRIZZLY BEAR	____	____	____	____	____	____	____	____
3.	CARIBOU	____	____	____	____	____	____	____	____
4.	COUGAR	____	____	____	____	____	____	____	____
5.	DEER	____	____	____	____	____	____	____	____
6.	ELK	____	____	____	____	____	____	____	____
7.	MOOSE	____	____	____	____	____	____	____	____
8.	MOUNTAIN GOAT	____	____	____	____	____	____	____	____
9.	MOUNTAIN SHEEP	____	____	____	____	____	____	____	____
10.	WOLF	____	____	____	____	____	____	____	____
11.	SMALL GAME	____	____	____	____	____	____	____	____
12.	WATERFOWL	____	____	____	____	____	____	____	____
13.	UPLAND BIRDS	____	____	____	____	____	____	____	____

9. Number of 1981 kills.

On your 1981 hunt how many animals did you kill and in which region(s) did the kill(s) take place? Please enter the number(s) for each species by Resource Management Region.

NUMBER OF ANIMALS KILLED
RESOURCE MANAGEMENT REGION

	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8
1. BLACK BEAR	____	____	____	____	____	____	____	____
2. GRIZZLY BEAR	____	____	____	____	____	____	____	____
3. CARIBOU	____	____	____	____	____	____	____	____
4. COUGAR	____	____	____	____	____	____	____	____
5. DEER	____	____	____	____	____	____	____	____
6. ELK	____	____	____	____	____	____	____	____
7. MOOSE	____	____	____	____	____	____	____	____
8. MOUNTAIN GOAT	____	____	____	____	____	____	____	____
9. MOUNTAIN SHEEP	____	____	____	____	____	____	____	____
10. WOLF	____	____	____	____	____	____	____	____
11. SMALL GAME	____	____	____	____	____	____	____	____
12. WATERFOWL	____	____	____	____	____	____	____	____
13. UPLAND BIRDS	____	____	____	____	____	____	____	____

10. How much time did you spend hunting?

During 1981 how many hunting trips did you make in each of British Columbia's eight Resource Management Regions? In total how many days did you spend hunting in each region?

NUMBER OF HUNTING TRIPS AND TOTAL NUMBER OF
DAYS SPENT HUNTING IN EACH RESOURCE MANAGEMENT REGION

	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8
NUMBER OF HUNTING TRIPS TAKEN IN 1981	____	____	____	____	____	____	____	____
NUMBER OF DAYS SPENT HUNTING	____	____	____	____	____	____	____	____

11. The purpose and quality of your hunt.

Please tell us about the purpose and the quality of your 1981 hunt in B.C. Did you hunt for a trophy or meat? Did you consider the quality of your 1981 hunt satisfactory or unsatisfactory? Which species will you hunt in 1982?

		PURPOSE OF HUNT FOR EACH SPECIES HUNTED CHECK ONE			QUALITY OF HUNT FOR EACH SPECIES HUNTED CHECK ONE		PLAN TO HUNT IN 1982 CHECK APPROPRIATE SPACES
		Trophy	Meat	Both	Satisfactory	Unsatisfactory	
1.	BLACK BEAR	____	____	____	____	____	____
2.	GRIZZLY BEAR	____	____	____	____	____	____
3.	CARIBOU	____	____	____	____	____	____
4.	COUGAR	____	____	____	____	____	____
5.	DEER	____	____	____	____	____	____
6.	ELK	____	____	____	____	____	____
7.	MOOSE	____	____	____	____	____	____
8.	MOUNTAIN GOAT	____	____	____	____	____	____
9.	MOUNTAIN SHEEP	____	____	____	____	____	____
10.	WOLF	____	____	____	____	____	____
11.	SMALL GAME	____	____	____	____	____	____
12.	WATERFOWL	____	____	____	____	____	____
13.	UPLAND BIRDS	____	____	____	____	____	____

12. Hunting on vacation and weekends.
We are interested in the relationship between hunting and annual vacation patterns.

Please tell us how many days vacation, excluding weekends, you took in total in 1981.

TOTAL DAYS VACATION IN 1981 ____

In 1981:
How many days did you spend hunting in B.C.

VACATION DAYS	WEEKEND DAYS	TOTAL DAYS HUNTING IN B.C.
____	____	____

How many days did you spend hunting outside B.C.?

VACATION DAYS	WEEKEND DAYS	TOTAL DAYS HUNTING OUTSIDE B.C.
____	____	____

13. Hunting group size.

What was the average size of your hunting party (including yourself) on the hunting trips you made in 1981?

SIZE OF PARTY ____

Of this number, how many people did not actively participate in hunting.

NUMBER OF NON-PARTICIPANTS ____

14. How much did you spend on your 1981 hunts?

Please estimate the total amount of money you spend hunting in B.C. in 1981. Do not include major capital expenditures on the purchase of cottages, camps, trucks, or boats. Please indicate both your total expenses and the expenses incurred in the Resource Management Region where you live.

		TOTAL HUNTING EXPENSES IN B.C.	HUNTING EXPENSES IN HOME REGION
1.	HUNTING LICENCE AND TAGS	$ .00	$ .00
2.	TRANSPORTATION AND TRAVEL	$ .00	$ .00
3.	FOOD AND LODGING	$ .00	$ .00
4.	TAXIDERMY AND BUTCHERING	$ .00	$ .00
5.	GUNS, AMMUNITION AND HUNTING EQUIPMENT	$ .00	$ .00
6.	OTHER EXPENSES	$ .00	$ .00

15. How valuable is hunting to you?

Suppose that your hunting costs in B.C. in 1981 had been higher than you indicated in question 14. For each wildlife species listed below, at what additional daily cost would you have stopped hunting in 1981? For each species listed indicate the closest dollar figure by putting a check mark in the appropriate space or by writing in your value in the space provided. The dollar amounts you indicate are intended to represent additional daily costs to your actual 1981 hunting costs shown in question 14.

INCREASES DAILY HUNTING COSTS AT WHICH YOU WOULD HAVE CHOSEN NOT TO HUNT IN B.C. IN 1981

		$1/DAY	$5/DAY	$10/DAY	$25/DAY	$50/DAY	$100/DAY	HIGHER OR OTHER VALUE/DAY
1.	BLACK BEAR	___	___	___	___	___	___	$ .00
2.	GRIZZLY BEAR	___	___	___	___	___	___	$ .00
3.	CARIBOU	___	___	___	___	___	___	$ .00
4.	COUGAR	___	___	___	___	___	___	$ .00
5.	DEER	___	___	___	___	___	___	$ .00
6.	ELK	___	___	___	___	___	___	$ .00
7.	MOOSE	___	___	___	___	___	___	$ .00
8.	MOUNTAIN GOAT	___	___	___	___	___	___	$ .00
9.	MOUNTAIN SHEEP	___	___	___	___	___	___	$ .00
10.	WOLF	___	___	___	___	___	___	$ .00
11.	SMALL GAME	___	___	___	___	___	___	$ .00
12.	WATERFOWL	___	___	___	___	___	___	$ .00
13.	UPLAND BIRDS	___	___	___	___	___	___	$ .00

16. Further comments.

Are there any further comments you wish to make? Please put your comments on a separate sheet and mail them to us in the envelope provided.